Vol. 909 Number 4

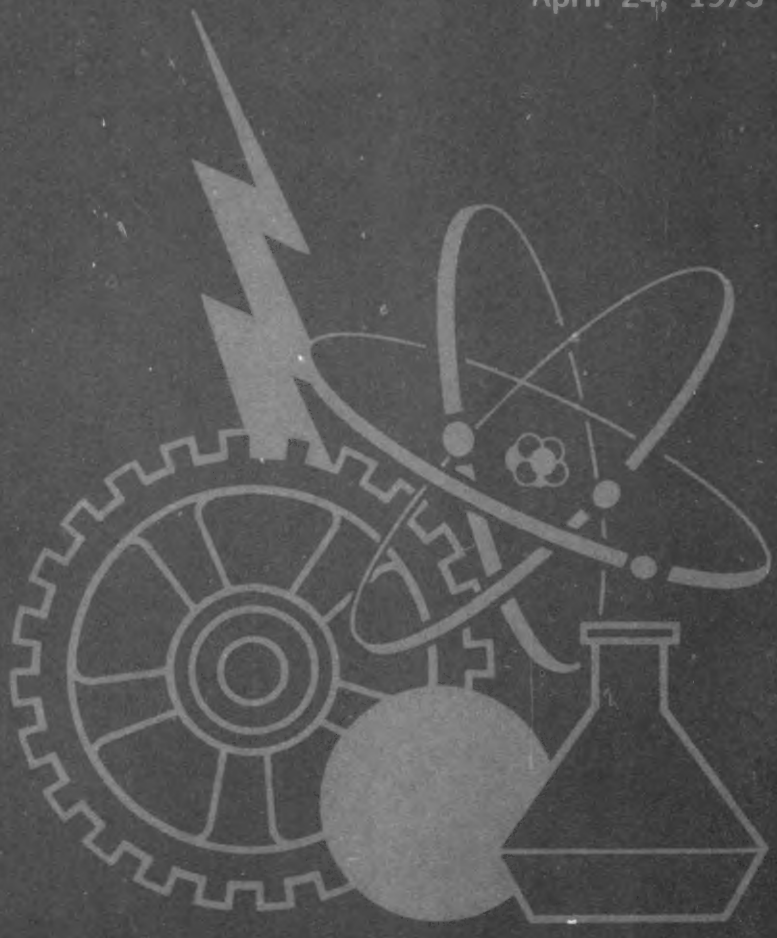
OFFICIAL GAZETTE

of the UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

April 24, 1973



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

April 24, 1973 Volume 909 Number 4

CONTENTS

	Page
GSA Patent Licensing Regulations for Government-Owned Inventions	1171
Patents and Trademark Notices	
Registration to Practice	1181
Title 37—Abandonment of Application	1181
Patent Suits	1181
Patent Notices	
Certificates of Correction for the Week of April 24, 1973	1183
Patents Available for Licensing or Sale	1183
Disclaimer	1187
Condition of Patent Applications	1188
Patents Granted	
General and Mechanical	1189
Chemical	1330
Electrical	1380
Design Patents Granted	1426
Index of Patentees	PI 1
Index of Designs	PI 31
Classification of	
Patents	PI 33
Designs	PI 35
Geographical Index of Residence of Inventors	
Patents	PI 36
Designs	PI 37

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

GSA PATENT LICENSING REGULATIONS FOR GOVERNMENT-OWNED INVENTIONS

The General Services Administration issued on January 29, 1973, regulations that will govern the granting of licenses, both exclusive and nonexclusive, under government-owned patents and patent applications. The regulations were promulgated pursuant to Section 2 of the August 23, 1971, Memorandum and Statement of Government Patent Policy issued by President Nixon, and will form new Subpart 101–4.1, Title 41, of the Code of Federal Regulations.

Each government agency is required by Section 101–4.104–1 of the regulations to cause lists of their inventions that are available for licensing to be published in the Federal Register, the Patent Office OFFICIAL GAZETTE, *and at least one other publication. In response to this requirement, the* OFFICIAL GAZETTE *will republish all such lists published in the Federal Register. Copies of listed patents are available from the Commissioner of Patents, Washington, D.C., 20231, for 50¢ each. Copies of patent applications, however, must be ordered from the National Technical Information Service (NTIS), Springfield, Virginia 22152. Also available from NTIS are two publications that include all patents and patent applications of the National Aeronautics and Space Administration that are available for licensing. These publications include abstracts of inventions which are listed by field of technology. The publications are entitled "NASA Patent Abstracts Bibliography," dated January 1972 and July 1972, and are identified as NASA SP–7039, Section 1, and NASA SP–7039(01), Section 1. Section 2 of both documents, representing a continuous indexing system, is also available.*

The GSA licensing regulations are republished below. Also republished are the various listings of government-owned patents and patent applications that have previously appeared in the Federal Register as available for licensing under these regulations. As additional listings are published in the Federal Register, they will be included in future issues of the OFFICIAL GAZETTE.

WILLIAM I. MERKIN,
Apr. 2, 1973. *Assistant Commissioner for Administration.*

Title 41—Public Contracts and Property Management

CHAPTER 101—FEDERAL PROPERTY MANAGEMENT REGULATIONS

SUBCHAPTER A—GENERAL

PART 101–4—PATENTS

Licensing of Government-Owned Inventions

This amendment of the Federal Property Management Regulations adds new Part 101–4, Patents, and new Subpart 101–4.1, Licensing of Government-Owned Inventions. The amendment sets forth regulations which implement the Presidential Statement of Government Patent Policy dated August 23, 1971. The statement specifically directs the General Services Administration to issue regulations which provide for the licensing and dedication of Government-owned inventions for the purpose of enhancing the utilization of such inventions. Development of the regulation was accomplished in cooperation with the Committee on Government Patent Policy, Federal Council for Science and Technology. Agency and industry comments were considered.

The table of contents for Subchapter A is amended to add new entries, as follows:

Subpart 101–4.1—Licensing of Government-Owned Inventions

Sec.
101–4.100 Scope of subpart.
101–4.101 Policy.
101–4.102 Definitions.
101–4.103 Types of licenses and conditions for licensing.
101–4.103–1 Government inventions available for licensing.
101–4.103–2 Nonexclusive license.
101–4.103–3 Limited exclusive license.
101–4.103–4 Additional licenses.
101–4.103–5 Royalties.
101–4.103–6 Reports.
101–4.104 Procedures.
101–4.104–1 Government agency publication requirements.
101–4.104–2 Contents of a nonexclusive license application.
101–4.104–3 Contents of an exclusive license application.
101–4.104–4 Published notices.
101–4.104–5 Modification or revocation.
101–4.104–6 Appeals.
101–4.105 Litigation.
101–4.106 Transfer of custody of Government inventions.

AUTHORITY: Sec. 205(c), 63 Stat. 390; 40 U.S.C. 486(c).

Part 101–4 is added as follows:

§ 101–4.100 Scope of subpart.

This subpart prescribes the terms, conditions, and procedures for the licensing of rights in domestic patents and patent applications vested in the United States of America, and for dedication of Government-owned inventions by a Government agency.

§ 101–4.101 Policy.

(a) A major premise of the Presidential Statement of Government Patent Policy, August 23, 1971 (36 FR 16887, August 26, 1971), is that Government-owned inventions normally will best serve the public interest when they are developed to the point of practical application and made available to the public in the shortest possible time. The granting of express nonexclusive or exclusive licenses for the practice of these inventions may assist in the accomplishment of the national objective to achieve a dynamic and efficient economy. However, it is recognized that there may be inventions as to which a Government agency deems dedication preferable to accomplish these objectives.

(b) The granting of nonexclusive licenses generally is preferable since the invention is thereby laid open to all interested parties and serves to promote competition in industry, if the invention is in fact promoted commercially. However, to obtain commercial utilization of the invention, it may be necessary to grant an exclusive license for a limited period of time as an incentive for the investment of risk capital to achieve practical application of an invention.

(c) Whenever the grant of an exclusive license is deemed appropriate, it shall be negotiated on terms and condi-

tions most favorable to the public interest. In selecting an exclusive licensee, consideration shall be given to the capabilities of the prospective licensee to further the technical and market development of the invention, his plan to undertake the development, the projected impact on competition, and the benefit to the Government and the public. Consideration shall be given also assisting small business and minority business enterprises, as well as economically depressed, low income, and labor surplus areas, and whether each or any applicant is a U.S. citizen or corporation. Where there is more than one applicant for an exclusive license, that applicant shall be selected who is determined to be most capable of satisfying the criteria and achieving the goals set forth in this subpart.

(d) Subject to the following: (1) Specific statutes governing the utilization of patent rights of certain Government agencies, or (2) any existing or future treaty or agreement between the United States and any foreign government or intergovernmental organization, or (3) licenses under or other rights to inventions made or conceived in the course of or under Government research and development contracts where such licenses or other rights to such inventions are granted to or provided for in the contract and acquired by the party contracting with the Government agency, no license shall be granted or implied in a Government-owned invention except as provided for in this subpart.

(e) No grant of a license under this subpart shall be construed to confer upon any licensee any immunity from the antitrust laws or from a charge of patent misuse, and the acquisition and use of rights pursuant to this subpart shall not be immunized from the operation of State or Federal law by reason of the source of the grant.

§ 101–4.102 Definitions.

(a) "Government invention" means an invention covered by a domestic patent or patent application that is vested in the United States and is designated by the Government agency having custody of the invention as appropriate for the grant of an express nonexclusive or exclusive license.

(b) "To the point of practical application" means to manufacture in the case of a composition or product, to practice in the case of a process, or to operate in the case of a machine under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

(c) "Government agency" means any executive department, independent commission, board, office, agency, administration, authority, wholly owned corporation, or other independent establishment of the executive branch of the Government of the United States of America.

(d) "The head of the Government agency" means the head of the agency or his designee.

§ 101–4.103 Types of licenses and conditions for licensing.

§ 101–4.103–1 Government inventions available for licensing.

Government inventions normally will be made available for the granting of express nonexclusive or limited exclusive licenses to responsible applicants according to the factors and conditions set forth in §§ 101–4.103–2 and 101–4.103–3, subject to the applicable procedures of § 101–4.104.

§ 101–4.103–2 Nonexclusive license.

(a) *Availability of licenses.* Each Government invention normally shall be made available for the granting of nonexclusive revocable licenses, subject to the provisions of any other licenses, including those under § 101–4.103–4.

(b) *Terms of grant.* (1) The duration of the license shall be for a period as specified in the license agreement, provided that the licensee complies with all the terms of the license.

(2) The license shall require the licensee to bring the invention to the point of practical appplication within a period specified in the license, or such extended period as may be agreed upon, and to continue to make the benefits of the invention reasonably accessible to the public.

(3) The license may be granted for all or less than all fields of use of the invention, and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(4) After termination of a period specified in the license agreement, the Government agency may restrict the license to the fields of use and/or geographic areas in which the licensee has brought the invention to the point of practical application and continues to make the benefits of the invention reasonably accessible to the public.

(5) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to the successor of that part of the licensee's business to which the invention pertains.

§ 101–4.103–3 Limited exclusive license.

(a) *Availability of licenses.* Each Government invention may be made available for the granting of a limited exclusive license provided that:

(1) The invention has been published as available for licensing pursuant to § 101–4.104–1 for a period of at least 6 months;

(2) The head of the Government agency has determined that (i) the invention may be brought to the point of practical application in certain fields of use and/or in certain geographical locations by exclusive licensing, (ii) the desired practical application has not been achieved under any nonexclusive license granted on the invention, and (iii) the desired practical application is not likely to be achieved expeditiously in the

public interest under a nonexclusive license or as a result of further Government-funded research or development;

(3) The notice of the prospective licensee has been published, pursuant to § 101–4.104–4(a) for at least 60 days; and

(4) After termination of the period set forth in § 101–4.103–3(a)(3), the Government agency has determined that no applicant for a nonexclusive license has brought or will bring, within a reasonable period, the invention to the point of practical application as specified in the exclusive license, and that to grant the exclusive license would be in the public interest.

(b) *Selection of exclusive licensee.* An exclusive licensee shall be selected on bases consistent with the policy set forth in § 101–4.101 and in accordance with the procedures set forth in § 101–4.104.

(c) *Terms of grant.* (1) The license may be granted for all or less than all fields of use of the Government invention and throughout the United States of America, its territories and possessions, the Commonwealth of Puerto Rico, and the District of Columbia, or in any lesser geographic portion thereof.

(2) Subject to the rights reserved to the Government in §§ 101–4.103–3(c)(6) and 101–4.103–3(c)(7), the licensee shall be granted the exclusive right to practice the invention in accordance with the terms and conditions specified in the license.

(3) The duration of the license shall be negotiated but shall be for a period less than the terminal portion of the patent, the period remaining being sufficient to make the invention reasonably available for the grant of a nonexclusive license; and such period of exclusivity shall not exceed 5 years unless the head of the Government agency determines on the basis of a written submission supported by a factual showing that a longer period is reasonably necessary to permit the licensee to enter the market and recoup his reasonable costs in so doing.

(4) The license shall require the licensee to bring the invention to the point of practical application within a period specified in the license, or within a longer period as approved by the Government agency, and to continue to make the benefits of the invention reasonably accessible to the public.

(5) The license shall require the licensee to expend a specified minimum amount of money and/or to take other specified actions, within a specified period of time after the effective date of the license, in an effort to bring the invention to the point of practical application.

(6) The license shall be subject to the irrevocable royalty-free right of the Government of the United States to practice and have practiced the invention by or on behalf of the government of the United States and on behalf of any foreign government or intergovernmental organization pursuant to any existing or future treaty or agreement with the United States.

(7) The license shall reserve to the Government agency the right to require the licensee to grant sublicenses to responsible applicants on terms that are reasonable in the circumstances (i) to the extent that the invention is required for public use by Government regulations, or (ii) as may be necessary to fulfill health or safety needs, or (iii) for other public purposes stipulated in the license.

(8) The license may extend to subsidiaries and affiliates of the licensee but shall be nonassignable without approval of the Government agency, except to successors of that part of the licensee's business to which the invention pertains.

(9) An exclusive licensee may grant sublicenses under his license, subject to the approval of the Government agency. Each sublicense granted by an exclusive licensee shall make reference to the exclusive license, including the rights retained by the Government under the exclusive license, and a copy of such sublicense shall be furnished to the Government agency.

(10) The license may be subject to such other terms as may be in the public interest.

§ 101–4.103–4 Additional licenses.

Subject to any outstanding licenses, nothing in this subpart shall preclude a Government agency from granting additional nonexclusive or limited exclusive licenses for Government-owned inventions when the Government agency determines that to do so would provide for an equitable exchange of patent rights. The following exemplify circumstances wherein such licenses may be granted:

(a) In consideration of the settlement of an interference;

(b) In consideration of a release of a claim of infringement; or

(c) In exchange for or as part of the consideration for a license under adversely held patents.

§ 101–4.103–5 Royalties.

(a) Normally, royalties shall not be charged under nonexclusive licenses granted to U.S. citizens and U.S. corporations on Government inventions; however, the Government agency may require other considerations.

(b) An exclusive license on a Government invention may require the payment of royalties, and/or other considerations, when the licensing situation and the policy in § 101–4.101 considered together, indicate that it is in the public interest to do so.

§ 101–4.103–6 Reports.

A license shall require the licensee to submit periodic reports on his efforts to achieve practical application of the invention. The reports shall contain information within his knowledge, or which he may acquire under normal business practices, pertaining to the commercial use being made of the invention and other information which the Government agency may determine is pertinent to its licensing activities and is specified in the license.

§ 101–4.104 Procedures.

§ 101–4.104–1 Government agency publication requirements.

Each Government agency shall cause to be published in the FEDERAL REGISTER, the Official Gazette of the U.S. Patent Office, and at least one other publication that the Government agency deems would best serve the public interest, a list of the Government inventions in its custody available for licensing under the conditions specified in § 101–4.103. The list shall be revised periodically to include directly, or by reference to a previously published list, all inventions currently available for licensing. Other publications on inventions available for licensing are encouraged and may include abstracts, when appropriate, as well as information on the design, construction, use, and potential market for the inventions.

§ 101–4.104–2 Contents of a nonexclusive license application.

An application for a nonexclusive license under a Government invention should be addressed to the head of the Government agency having custody of the invention, and shall include:

(a) Identification of invention for which license is desired, including the patent application serial number or patent number, title and date, if known, and any other identification of invention;

(b) Name and address of the person, company, or organization applying for license and whether the applicant is a U.S. citizen or a U.S. corporation;

(c) Name and address of representative of applicant to whom correspondence should be sent;

(d) Nature and type of applicant's business;

(e) Source of information concerning the availability of a license on this invention;

(f) Purpose for which license is desired and a brief description of applicant's plan to achieve that purpose;

(g) A statement of the fields of use for which applicant intends to practice the invention; and

(h) A statement as to the geographic areas in which the applicant would practice the invention.

§ 101–4.104–3 Contents of an exclusive license application.

In addition to the information indicated in § 101–4.104–2, an application for an exclusive license shall include:

(a) Applicant's status, if any, in any one or more of the following categories: (1) Small business firm, (2) minority business enterprise, (3) location in a surplus labor area, (4) location in a low-income area, and (5) location in an economically depressed area;

(b) A statement of applicant's capability to undertake the development and marketing required to achieve the practical application of the invention;

(c) A statement describing the time, expenditure, and other acts which the applicant considers necessary to achieve practical application of the invention and the applicant's offer to invest that sum to perform such acts if the license is granted;

(d) A statement that contains the applicant's best knowledge of the extent to which the Government invention is being practiced by private industry and the Government; and

(e) Any other facts which the applicant believes are evidence that it is in the public interest for the Government agency to grant an exclusive license rather than a nonexclusive license and that such exclusive license should be granted to the applicant.

§ 101–4.104–4 Published notices.

(a) A notice that a prospective exclusive licensee has been selected shall be published in the FEDERAL REGISTER, and a copy of the notice shall be sent to the Attorney General. The notice shall include:

(1) Identification of the invention;

(2) Identification of the selected licensee;

(3) Duration and scope of the contemplated license; and

(4) A statement to the effect that the license will be granted unless:

(i) An application for a nonexclusive license, submitted by a responsible applicant pursuant to § 101–4.104–2, is received by the Government agency having custody of the invention within 60 days from the publication of the notice in the FEDERAL REGISTER, and the Government agency determines in accordance with its prescribed procedures under which procedures the Government agency shall record and make available for public inspection all decisions made pursuant thereto and the basis therefor, that the applicant has established that he has already achieved or is likely to bring the invention to the point of practical application within a reasonable period under a nonexclusive license; or

(ii) The Government agency determines that a third party has presented evidence and argument which has established that it would not be in the public interest to grant the exclusive license.

(b) If an exclusive license has been granted pursuant to this Subpart 101–4.1, notice thereof shall be published in the FEDERAL REGISTER. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Duration and scope of the license.

(c) If an exclusive license has been modified or revoked pursuant to § 101–4.104–5, notice thereof shall be published in the FEDERAL REGISTER. Such notice shall include:

(1) Identification of the invention;

(2) Identification of the licensee; and

(3) Effective date of the modification or revocation.

§ 101–4.104–5 Modification or revocation.

(a) Any license granted pursuant to this Subpart 101–4. 1 may be modified or revoked by the Government agency

granting the license if the licensee at any time defaults in making any report required by the license or commits any breach of any covenant or agreement therein contained.

(b) A license may also be revoked by the Government agency granting the license if the licensee willfully makes a false statement of a material fact or willfully omits a material fact in the license application or any report required in the license agreement.

(c) Before modifying or revoking any license granted pursuant to this subpart for any cause, the Government agency shall furnish the licensee and any sublicensee of record a written notice of intention to modify or revoke the license, and the licensee and any sublicensee shall be allowed 30 days after such notice to remedy any breach of any covenant or agreement as referred to in (a) of this section or to show cause why the license should not be modified or revoked.

§ 101–4.104–6 Appeals.

An applicant for a license, a licensee, or such other third party who has participated under § 101–4.104–4(a)(4)(ii) shall have the right to appeal, in accordance with procedures prescribed by the Government agency, any decision concerning the granting, denial, interpretation, modification, or revocation of a license.

§ 101–4.105 Litigation.

An exclusive licensee shall be granted the right to sue at his own expense any party who infringes the rights set forth in his license and covered by the licensed patent. The licensee may join the Government upon consent of the Attorney General as a party complainant in such suit but without expense to the Government, and the licensee shall pay costs and any final judgment or decree that may be rendered against the Government in such suit. The Government shall have an absolute right to intervene in any such suit at its own expense. The licensee shall be obligated to furnish promptly to the Government, upon request, copies of all pleadings and other papers filed in any such suit and of evidence adduced in proceedings relating to the licensed patent including, but not limited to, negotiations or settlement and agreements settling claims by a licensee based on the licensed patent, and all other books, documents, papers, and records pertaining to such suit. If as a result of any such litigation the patent shall be declared invalid, the licensee shall have the right to surrender his license and be relieved from any further obligation thereunder.

§ 101–4.106 Transfer of custody of Government inventions.

A Government agency having custody of a Government-owned invention may enter into an agreement to transfer its custody to another Government agency for purposes of administration, including the granting of licenses pursuant to this subpart.

Effective date. This subpart is effective May 7, 1973, but may be observed earlier. However, the head of a Government agency may exclude from the terms, conditions, and procedures set forth in this subpart any license that was in the process of being negotiated on the effective date.

Dated: January 29, 1973.

ARTHUR F. SAMPSON,
Acting Administrator of General Services.

[FR Doc.73–2119 Filed 2–2–73;8:45 am]

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Inquiries and requests for licensing information should be directed to the address cited on the first page of each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Inquiries and requests for licensing information should be directed to the "Assignee" as indicated on the copy of the patent.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Patent application 274,749. Inhibition of Leukemia Utilizing 5-Methyltetra-Hydrohomofolate. Filed July 24, 1972. PC $3/MF $0.95.

Patent 3,674,818. Synthesis of a Material with Juvenile Hormone Activity. Filed December 5, 1969. Patented July 4, 1972. Not available NTIS.

Patent 3,677,092. Volume Metering Apparatus for Circulatory Assist Pumps. Filed June 17, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,233. Standardized Set of Compensating Filters For Mantel-Field Radiation Therapy. Filed April 2, 1970. Patented July 18, 1972. Not available NTIS.

DEPARTMENT OF THE INTERIOR

Patent 3,693,411. Apparatus for Measuring Thixotropy. Filed March 18, 1971. Patented September 26, 1972. Not available NTIS.

Patent 3,693,412. Method for Measuring Thixotropy. Filed March 18, 1971. Patented September 26, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 266,930. A Potable Water Dispenser. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,925. A Fluid Dispenser. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,822. Method and Apparatus for Synchronizing a Single Channel Digital Communications System. Filed June 27, 1972. PC $5.50/MF $0.95.

Patent application 274,360. Pulse Code Modulated Signal Synchronizer. Filed July 24, 1972. PC $3.50/MF $0.95.

Patent application 266,912. Gated Compressor, Distortionless Signal Limiter. Filed June 28, 1972. PC $3.25/MF $0.95.

Patent application 258,464. Multi-Wire High Temperature Thermocouple. Filed May 31, 1972. PC $3/MF $0.95.

Patent application 254,323. Thermocouple Tape. Filed May 17, 1972. PC $3/MF $0.95.

Patent application 271,951. An Apparatus Used in the Calibration of Ultra High Vacuum System. Filed July 14, 1972. PC $3/MF $0.95.

Patent application 266,911. Apparatus for Scanning the Surface of a Cylindrical Body. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 239,577. A System for Calibrating Pressure Transducer. Filed March 30, 1972. PC $3/MF $0.95.

Patent application 275,118. High Field CDS Detector for Infrared Radiation. Filed July 26, 1972. PC $3/MF $0.95.

Patent application 266,927. Apparatus for Producing High Purity I–123. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,948. Doppler Shift System. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,866. Electrostatically Controlled Heat Shutter. Filed June 28, 1972. PC $3/MF $0.95.

TENNESSEE VALLEY AUTHORITY

Patent 3,676,101. Self-Suspending Ammonium Polyphosphate Suspension Fertilizer. Filed January 28, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,674,219. Green-Wood Fibrating Means and Method. Filed July 24, 1970. Patented July 4, 1972. Not available NTIS.

[FR Doc. 72-21421; Filed 12-12-72; 8:49 am]

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 266,832. Electron Beam Controller. Filed June 27, 1972. PC $3/MF $0.95.

Patent application 258,152. New Use of Thin Film Light Detector. Filed May 31, 1972. PC $3.50/MF $0.95.

Patent application 273,223. Process for Producing Nickel Aluminide Coating Low Alloy Stainless Steel. Filed July 19, 1972. PC $3/MF $0.95.

Patent application 248,471. Air Conditioning System and Component Therefor: Distributing Air Flow from Opposite Directions. Filed April 28, 1972. PC $3.25/MF $0.95.

Patent application 266,913. Scanning Nozzle Plating System. Filed June 28, 1972. PC $3/MF $0.95.

Patent application 266,928. Method of Heat Treating a Formed Powder Product Material. Filed June 28, 1972. PC $3/MF $0.95.

[FR Doc. 72-21729; Filed 12-19-72; 8:45 am]

ATOMIC ENERGY COMMISSION

Patent 3,640,808. Radiolytic Destruction of Nonbiodegradable Organic Pesticides. Filed October 7, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,844. Power Flattened Seed-Blanket Reactor Core. Filed November 7, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,845. Dynamic Seal. Filed July 9, 1968. Patented February 8, 1972. Not available NTIS.

Patent 3,640,888. Californium-252 Neutron Source and Method of Making Same. Filed December 11, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,641,226. Method for Purification of Di-(2-ethylhexyl) Phosphoric Acid. Filed November 24, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,641,444. Baseline Compensating Integrator. Filed September 1, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,641,454. Electron Beam-Pumped Gas Laser System. Filed May 25, 1970. Patented February 8, 1972. Not available NTIS.

DEPARTMENT OF THE INTERIOR

Patent 3,696,866. Method for Producing Retorting Channels in Shale Deposits. Filed January 27, 1971. Patented October 10, 1972. Not available NTIS.

Patent 3,698,924. Saline Resistance Cementitious Binders. Filed May 5, 1970. Patented October 17, 1972. Not available NTIS.

[FR Doc. 72-22221; Filed 12-26-72; 8:51 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,638,160. Shock Pressure Transducer. Filed September 4, 1969. Patented January 25, 1972. Not available NTIS.

Patent 3,639,978. Method for Making Flexible Electrical Connections. Filed November 3, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,579. In Situ Pressure Leaching Method. Filed April 28, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,640,704. High-Temperature-Strength Precipitation-Hardenable, Austenitic, Iron-Base Alloys. Filed January 20, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,641,465. Compact High-Power Broadband Radiofrequency Load Termination. Filed September 15, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,644,221. Polycrystalline Graphite with Controlled Electrical Conductivity. Filed November 14, 1969. Patented February 22, 1972. Not available NTIS.

Patent 3,644,664. Nuclear Fuel Body and Process for Making Same. Filed November 14, 1969. Patented February 22, 1972. Not available NTIS.

Patent 3,644,777. Cathode-Ray Tube with Serpentine-Shaped Transmission Line Deflection Means. Filed June 2, 1970. Patented February 22, 1972. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,698,559. Reverse Osmosis Module Suitable for Food Processing. Filed March 1, 1971. Patented October 17, 1972. Not available NTIS.

Patent 3,697,390. Electrodes Position of Metallic Boride Coatings. Filed April 14, 1969. Patented October 10, 1972. Not available NTIS.

Patent 3,699,391. Reactor Fault Relay. Filed September 2, 1971. Patented October 17, 1972. Not available NTIS.

Patent 3,701,905. Static Stopper. Filed October 27, 1971. Patented October 31, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 281,876. Ultrasonic Biomedical Measuring and Recording Apparatus. Filed August 18, 1972. PC $3.25/MF $0.95.

Patent application 277,436. Insert Facing Tool. Filed August 2, 1972. PC $3/MF $0.95.

Patent application 280,390. Method of Making Rolling Elements for Bearings. Filed August 14, 1972. PC $3/MF $0.95.

Patent application 273,240. Ejectable Underwater Sound Source Recovery Assembly. Filed July 19, 1972. PC $3/MF $0.95.

Patent application 288,856. High Power Laser Apparatus and System. Filed September 13, 1972. PC $3/MF $0.95.

Patent application 119,282. Pump for Delivering Heated Fluids. Filed February 26, 1971. PC $3.25/MF $0.95.

Patent application 289,033. Enhanced Diffusion Welding. Filed September 14, 1972. PC $3/MF $0.95.

TENNESSEE VALLEY AUTHORITY

Patent 3,697,247. Elimination of Magnesium Gels in Liquid and Suspension Fertilizers Derived from Wet Acid. Filed April 1, 1971. Patented October 10, 1972. Not available NTIS.

[FR Doc. 73-400; Filed 1-9-73; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,650,926. Radiolytic Treatment of Organic Industrial Wastes in a Pressurized Oxygen Atmosphere. Filed October 7, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,640,115. Tube Spacer Tool. Filed December 19, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,640,336. Recovery of Geothermal Energy by Means of Underground Nuclear Detonations. Filed June 19, 1970. Patented February 8, 1972. Not available NTIS.

Patent 3,638,200. Electrostatic Recording System. Filed March 4, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,638,160. Shock Pressure Transducer. Filed September 4, 1969. Patented January 25, 1972. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,699,849. Hydraulic Cell for Calibrating a Pressure Transducer. Filed November 12, 1970. Patented October 24, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 289,050. Rocket Chamber and Method of Making. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 281,877. Method and Apparatus for Checking the Stability of a Setup for Making Reflection Type Holograms. Filed August 18, 1972. PC $3/MF $0.95.

Patent application 282,738. Shoulder Harness and Lap Belt Restraint System. Filed August 22, 1972. PC $3/MF $0.95.

[FR Doc. 73-847; Filed 1-16-73; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,635,676. Method for Increasing the Strength of Carbon Foam. Filed November 5, 1969. Patented January 18, 1972. Not available NTIS.

Patent 3,635,793. Connector Assembly. Filed October 7, 1969. Patented January 18, 1972. Not available NTIS.

Patent 3,635,831. Production of High-Purity Cesium-137. Filed September 25, 1969. Patented January 18, 1972. Not available NTIS.

Patent 3,636,323. Geographic Position Locator. Filed May 1, 1970. Patented January 18, 1972. Not available NTIS.

Patent 3,636,389. Magnetohydrodynamic Method and System. Filed March 22, 1971. Patented January 18, 1972. Not available NTIS.

Patent 3,636,462. Automatic DC Level Controlling System for a DC-Coupled Amplifier. Filed December 11, 1970. Patented January 18, 1972. Not available NTIS.

Patent 3,636,674. Insulation Module with Superposed Deformed Core Sheets. Filed August 10, 1964. Patented January 25, 1972. Not available NTIS.

Patent 3,636,923. Apparatus for Coating Microspheres with Pyrolytic Carbon. Filed May 4, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,637,314. Tubing Reflectometer. Filed January 13, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,637,422. Dispersion-Hardened Tungsten Alloy. Filed January 3, 1968. Patented January 25, 1972. Not available NTIS.

Patent 3,638,017. Thermoluminescent Dosimeter Encoding and Readout Method. Filed December 23, 1969. Patented January 25, 1972. Not available NTIS.

Patent 3,638,023. Radioisotopic Power Source. Filed November 7, 1969. Patented January 25, 1972. Not available NTIS.

Patent 3,638,154. Braided Superconductor. Filed March 26, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,643,441. Oil Storage Method. Filed May 5, 1970. Patented February 22, 1972. Not available NTIS.

Patent 3,650,896. Nuclear Fuel Particles. Filed October 9, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,652,233. Method of Improving Recovery of Neptunium in the Purex Process. Filed December 29, 1969. Patented March 28, 1972. Not available NTIS.

Patent 3,652,744. Method of Making Nuclear Fuel Elements. Filed November 19, 1969. Patented March 28, 1972. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,700,591. Clearing of Used Membrane with Oxalic Acid. Filed September 24, 1970. Patented October 24, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 293,727. Phase Detection System for AC Power Lines. Filed September 29, 1972. PC $3/MF $0.95.

[FR Doc. 73-1387; Filed 1-23-73; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,634,033. Method for the Production of Single Crystals. Filed June 10, 1970. Patented June 11, 1972. Not available NTIS.

Patent 3,634,704. Apparatus for the Production of Highly Stripped Ions. Filed September 2, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,636,778. Method and Means for Dimensional Inspection of Tubing. Filed June 5, 1970. Patented June 25, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 289,048. Totally Confined Explosive Welding. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 289,017. Grinding Arrangement for Ball Nose Milling Cutters. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 287,150. Flow Control Valve. Filed September 7, 1972. PC $3/MF $0.95.

Patent application 293,726. Improved Diffusion Welding. Filed September 29, 1972. PC $3/MF $0.95.

Patent application 290,021. Bonded Joint and Method. Filed September 18, 1972. PC $3/MF $0.95.

Patent application 297,128. Differential Phase Shift Keyed Communication System. Filed October 12, 1972. PC $3.50/MF $0.95.

[FR Doc. 73-1807; Filed 1-30-73; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,632,520. Radioisotope Fuel. Filed January 4, 1968. Patented June 4, 1972. Not available NTIS.

Patent 3,633,888. Concentric Fluidized Beds. Filed February 19, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,634,558. Method of Producing Mono-Disperse Silica Spheres Having a Dispersed Radioactive Tracer. Filed October 29, 1968. Patented January 11, 1972. Not available NTIS.

Patent 3,634,563. Method for the Manufacture of Inorganic Thermal Insulation. Filed Mar. 13, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,634,731. Generalized Circuit. Filed August 6, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,638,020. Mineral-Detection Apparatus. Filed May 26, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,638,127. Stabilization System for Resonant Cavity Excitation. Filed January 29, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,640,805. Removal of Nitrate Contamination From Nickel-Plating Solutions. Filed June 13, 1969. Patented February 8, 1972. Not available NTIS.

Patent 3,644,821. Capacitance Method and Apparatus for Detecting an Interface Between Electrically Conductive Immiscible Liquids. Filed January 14, 1969. Patented. February 22, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 186,700. Automatic Vehicle Location System. Filed October 5, 1971. PC $3.75/MF $0.95.

Patent application 297,127. Differential Phase Shift Keyed Signal Resolver. Filed October 12, 1972. PC $3.25/MF $0.95.

Patent application 244,566. Star Tracking Reticles Process for the Production Thereof. Filed April 17, 1972. PC $3.25/MF $0.95.

Patent application 288,847. Electric Field Measuring and Display System. Filed September 13, 1972. PC $3/MF $0.95.

Patent application 292,682. Automatic Lightning Detection and Photographic System. Filed September 27, 1972. PC $3/MF $0.95.

[FR Doc. 73-2178; Filed 2-6-73; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,646,813. Cryogenic-Sensing Device Using Uranium Monophosphide-Uranium Monosulphide. Filed September 9, 1969. Patented March 7, 1972. Not available NTIS.

Patent 3,647,421. Reprocessing a Plutonium Dioxide-Molybdenum Fuel. Filed April 4, 1969. Patented March 7, 1972. Not available NTIS.

Patent 3,648,472. Cryogenic Fluid Discharge Muffler. Filed February 6, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,649,450. Control Rod Position Indication System. Filed March 4, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,649,452. Nuclear Reactor Fuel Coated Particles. Filed March 28, 1968. Patented March 14, 1972. Not available NTIS.

Patent 3,649,829. Laminar Flow Cell. Filed October 6, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,649,834. Laminar Gas Flow Radiation Detector. Filed October 6, 1970. Patented March 14, 1972. Not available NTIS.

Patent 3,650,804. Process for Decreasing Permeability of a Porous Body and the Product Thereof. Filed February 19, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,650,893. Port Plug for a Plasma-Confining Cavity. Filed December 2, 1969. Patented March 21, 1972. Not available NTIS.

Patent 3,652,744. Method of Making Nuclear Fuel Elements. Filed November 19, 1969. Patented March 28, 1972. Not available NTIS.

Patent 3,654,794. Drawbench. Filed March 7, 1969. Patented April 11, 1972. Not available NTIS.

Patent 3,656,012. Method of Generating Unipolar and Bipolar Pulses. Filed February 2, 1971. Patented April 11, 1972. Not available NTIS.

Patent 3,656,116. Computer Interface. Filed May 5, 1970. Patented April 11, 1972. Not available NTIS.

Patent 3,656,128. Magnetic Matrix Recording System. Filed December 22, 1970. Patented April 11, 1972. Not available NTIS.

Patent 3,657,137. Nuclear Fuel Comprising Uranium Dioxide in a Porous Ceramic Oxide Matrix. Filed June 4, 1964. Patented April 18, 1972. Not available NTIS.

Patent 3,657,542. Production of Beams of Excited Energetic Neutral Particles. Filed May 4, 1970. Patented April 18, 1972. Not available NTIS.

Patent 3,657,920. Sequential Sampler. Filed May 6, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,658,467. System for Total Iodine Retention. Filed July 28, 1969. Patented April 25, 1972. Not available NTIS.

Patent 3,658,644. Fast Breeder Reactor. Filed February 6, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,105. Subatomic Particle Detector with Liquid Electron Multiplication Medium. Filed October 21, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,106. Portable Neutron Source Using a Plurality of Moderating Means. Filed September 21, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,107. Radioisotopic Fuel Capsule. Filed July 29, 1970. Patented April 25, 1972. Not available NTIS.

Patent 3,659,527. High Temperature Detonator. Filed October 29, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,660,075. Crucible Coating for Preparation of U and P Alloys Containing ZR or HF. Filed October 16, 1969. Patented May 2, 1972. Not available NTIS.

Patent 3,660,300. Method of Preparing Oxidized Radon Solutions. Filed June 5, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,660,712. Electrode Structure for Controlling Electron Flow with High Transmission Efficiency. Filed December 9, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,660,715. Ion Source with Mosaic Ion Extraction Means. Filed August 18, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,662,589. Ultrasonic Flow Determination by Special Analysis. Filed February 2, 1971. Patented May 16, 1972. Not available NTIS.

Patent 3,662,280. Explosively Driven Pulsed Chemical Laser. Filed November 16, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,662,634. Hydrostatically Powered Messenger Style Wire Cutter. Filed December 18, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,178. Mixer-Settler Apparatus. Filed June 3, 1969. Patented May 16, 1972. Not available NTIS.

Patent 3,663,360. Conversion of High Temperature Plasma Energy into Electrical Energy. Filed August 13, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,361. Nuclear Fusion Device of the Air-Core Tokamak Type. Filed February 17, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,362. Controlled Fusion Reactor. Filed December 22, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,855. Cold Cathode Vacuum Discharge Tube with Cathode Discharge Face Parallel with Anode. Filed February 24, 1967. Patented May 16, 1972. Not available NTIS.

Patent 3,663,363. Identification of Failed Fuel Elements. Filed March 13, 1969. Patented May 16, 1972. Not available NTIS.

Patent 3,664,921. Proton E-Layer Astron for Producing Controlled Fusion Reactions. Filed October 16, 1969. Patented May 23, 1972. Not available NTIS.

Patent 3,664,950. Process for Selective Removal and Recovery of Chromates from Water. Filed June 23, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,665,236. Electrode Structure for Controlling Electron Flow with High Transmission Efficiency. Filed December 9, 1970. Patented May 23, 1972. Not available NTIS.

Patent 3,665,573. Method of Fabricating a Heat Pipe. Filed May 18, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,451. Aluminum Alloy. Filed August 13, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,529. Method of Conditioning Aluminous Surfaces for the Reception of Electroless Nickel Plating. Filed April 2, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,624. Hydraulic Hold-Down for Nuclear Reactor Fuel Assembly. Filed July 18, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,666. Ferroelectric Ceramic Materials. Filed December 17, 1969. Patented May 20, 1972. Not available NTIS.

Patent 3,666,845. Production-Scale Formation of Ultrahigh Purity Carbide Powders. Filed May 6, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,029. Method and Means for Charging or Discharging Superconducting Windings. Filed April 15, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,246. Method and Apparatus for Precise Temperature Control. Filed December 4, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,066. Dynamic Stabilizer for Plasma Instabilities to Improve Plasma Confinement and to Increase Plasma Density. Filed February 18, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,067. Polygonal Astron Reactor for Producing Controlled Fusion Reactions. Filed October 16, 1969. Patented June 6, 1972. Not available NTIS.

Patent 3,668,084. Process for Plating Uranium with Metal. June 10, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,668,285. Warm-Pressing Method of Making Stacked Fuel Plates. Filed October 27, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,669,631. Removal of Materials from Ion Exchange Resins. Filed January 8, 1970. Patented June 13, 1972. Not available NTIS.

Patent 3,670,164. Personnel Plutonium Monitor. Filed August 18, 1970. Patented June 13, 1972. Not available NTIS.

Patent 3,671,199. Plutonium Hexafluoride Reduction. Filed March 4, 1969. Patented June 20, 1972. Not available NTIS.

Patent 3,671,392. Light-Water Breeder Reactor. Filed March 15, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,671,455. Nitriles as Scintillation Solvents and Solutes. Filed May 6, 1971. Patented June 20, 1972. Not available NTIS.

Patent 3,672,204. Transient Thermal Method and Means for Nondestructively Testing a Sample. Filed April 8, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,672,246. Automatic Spindle Growth Compensation System. Filed April 20, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,672,772. Automatic Photoelastimeter. Filed August 31, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,672,846. Method for Reprocessing Spent Molten Salt Reactor Fuels. Filed April 21, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,673,038. Method for Brazing Graphite and Other Refractory Materials. Filed April 14, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,673,513. Electron Beam-Initiated Chemical Laser Systems. Filed May 26, 1970. Patented June 27, 1972. Not available NTIS.

[FR Doc. 73-2806; Filed 2-13-73; 8:45 am]

U.S. ATOMIC ENERGY COMMISSION

Patent 3,632,385. Carbon Composite Structures and Method for Making Same. Filed Mar. 17, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,597. Flow Rate Control Method. Filed May 28, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,633,665. Heat Exchanger Using Thermal Convection Tubes. Filed May 11, 1970. Patented January 11, 1972. Not available NTIS.

Patent 3,638,032. Fast-Acting Magnetic Switching Device for High-Level Electrical Signals and Diverter Incorporating Same. Filed February 4, 1970. Patented January 25, 1972. Not available NTIS.

Patent 3,646,309. Self-Adaptive Welding Torch Controller. Filed January 26, 1971. Patented February 29, 1972. Not available NTIS.

Patent 3,646,330. Continuous Digital Ratemeter. Filed May 28, 1970. Patented February 29, 1972. Not available NTIS.

Patent 3,656,063. Digital Frequency Comparator. Filed April 29, 1970. Patented April 11, 1972. Not available NTIS.

Patent 3,660,031. Method for Preparing Boron Suboxide. Filed March 9, 1971. Patented May 2, 1972. Not available NTIS.

Patent 3,660,047. Production of Plutonium Formate and Plutonium Dioxide. Filed March 18, 1970. Patented May 2, 1972. Not available NTIS.

Patent 3,661,061. Picture Position Finder. Filed May 5, 1969. Patented May 9, 1972. Not available NTIS.

Patent 3,661,267. Solid Filters. Filed November 3, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,661,709. Nonswelling Uranium Nitride Fuel. Filed April 6, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,662,042. Method of Making a Nuclear Reactor Fuel Element of Uranium Mononitride in a Refractory Metal Matrix. Filed September 25, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,662,781. Sodium Heated Steam Generator. Filed March 2, 1971. Patented May 16, 1972. Not available NTIS.

Patent 3,663,504. Radiation-Resistant Plastic Insulators. Filed November 10, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,664,859. Pulsed Method for Impregnation of Graphite. Filed March 4, 1969. Patented May 23, 1972. Not available NTIS.

Patent 3,665,752. Vibration Density Meter Comprising Nodal Circle Supported Resonant Disk. Filed June 9, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,426. Continuous Process for the Production of High-Density Thoria. Filed May 1, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,443. Plutonium Production. Filed November 5, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,560. Electrochemical Power-Producing Cell. Filed September 21, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,673. Method of Disposing of Radioactive Organic Waste Solutions. Filed December 24, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,784. Process for Preparing α,α-Fluorinated Alkyl Isocyanates. Filed August 27, 1969. Patented May 30, 1972. Not available NTIS.

Patent 3,666,846. Process of Forming an Isotopic Heat Source. Filed April 11, 1969. Patented May 30, 1972. Not available NITS.

Patent 3,666,953. Up-Down Counter for Background Compensation. Filed August 18, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,508. Electrostatic Accelerated Charged Particle Deflector. Filed April 8, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,059. All-Metal Discharge Tube. Filed March 9, 1971. Patented May 30, 1972. Not available NTIS.

Patent 3,668,065. Apparatus for the Conversion of High Temperature Plasma Energy into Electrical Energy. Filed September 15, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,670,648. Linear Structure Capturing and Cutting Apparatus. Filed August 14, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,671,385. Fibrous Carbonaceous Composites and Method for Manufacturing Same. Filed June 17, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,673,327. Touch Actuable Data Input Panel Assembly. Filed November 2, 1970. Patented June 27, 1972. Not available NTIS.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Patent application 263,559. Synthesis of N5-Methyltetrahydro-Homofolic Acid and Related Reduced Derivatives of Homofolic Acid. Filed June 16, 1972. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 291,845. Arterial Pulse Wave Pressure Transducer. Filed September 25, 1972. PC $3/MF $0.95.

Patent application 178,771. Anti-Fog Composition. Filed September 8, 1971. PC $3/MF $0.95.

Patent application 304,705. Pulse Code Modulated Signal Synchronizer. Filed November 8, 1972. PC $3.50/MF $0.95.

Patent application 292,698. Electromagnetic Wave Energy Converter. Filed September 27, 1972. PC $3/MF $0.95.

Patent application 292,685. Turnstile Slot Antenna. Filed September 27, 1972. PC $3/MF $0.95.

Patent application 293,725. Star Scanner. Filed September 29, 1972. PC $3.25/MF $0.95.

Patent application 304,430. Conductive Elastomeric Extensometer. Filed November 7, 1972. PC $3/MF $0.95.

Patent application 289,049. Attitude Sensor. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 285,705. Digital Controller for a Baum Folding Machine. Filed September 1, 1972. PC $3.75/MF $0.95.

Patent application 301,039. Latch Mechanism. Filed October 26, 1972. PC $3.25/MF $0.95.

Patent application 293,739. Passive Dual Spin Misalignment Compensators. Filed September 29, 1972. PC $3/MF $0.95.

Patent application 281,875. Method and Apparatus for Determining Thermophysical Properties of Specimens. Filed August 18, 1972. PC $3/MF $0.95.

[FR Doc. 73-3256; Filed 2-20-73; 8:45 am]

U.S. DEPARTMENT OF COMMERCE

Patent application 289,040. Preparation of Functional Fish Protein Concentrates and Isolates. Filed September 14, 1972. PC $3/MF $0.95.

Patent application 309,868. Sulfur Dioxide Pollution Monitor. Filed November 27, 1972. PC $3/MF $0.95.

Patent application 312,529. A System for Determining Parameters of a Particle by Radiant Energy Scattering Techniques. Filed December 6, 1972. PC $3/MF $0.95.

Patent application 221,249. Method of Producing an Intense, High-Purity K X-ray Beam. Filed January 27, 1972. PC $3/MF $0.95.

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,378,336. Sulfate Removal from Brines. Filed June 17, 1966. Patented April 16, 1968. Not available NTIS.

Patent 3,577,331. Apparatus and Process for Effecting Changes in Solution Concentrations. Filed June 8, 1967. Patented May 4, 1971. Not available NTIS.

Patent 3,547,579. Removal of Sulfates from Brines. Filed December 19, 1967. Patented December 15, 1970. Not available NTIS.

Patent 3,632,309. Formation and Separation of Barium Hydrosulfide and Barium Hydroxide for Use in Chemical Recovery Processes. Filed March 27, 1970. Patented January 4, 1972. Not available NTIS.

Patent 3,676,335. Process for Effecting Changes in Solution Concentrations. Filed December 9, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,691,818. Method for Determination of Impurities in Helium Gas. Filed March 27, 1970. Patented September 19, 1972. Not available NTIS.

Patent 3,683,589. Helium Purifier. Filed September 8, 1970. Patented August 15, 1972. Not available NTIS.

Patent 3,676,203. Semipermeable Membranes. Filed August 7, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,676,107. Refining Iron-Bearing Wastes. Filed January 4, 1971. Patented July 11, 1972. Not available NTIS.

Patent application 287,592. Reverse Osmosis Membrane. Filed September 19, 1972. PC $3/MF $0.95.

Patent application 285,995. Method of Generating Ice Nuclei Smoke Particles for Weather Modification and Apparatus Therefor. Filed September 5, 1972. PC $3/MF $0.95.

Patent application 285,263. Recovery of Nickel and Cobalt. Filed August 31, 1972. PC $3/MF $0.95.

Patent application 281,667. System for Producing and Maintaining Purified, Sterile Water. Filed August 29, 1972. PC $3/MF $0.95.

Patent application 273,666. Fiber-Optic Probe for Measuring Light Intensity. Filed July 20, 1972. PC $3/MF $0.95.

Patent application 292,231. Bonding Composition. Filed October 3, 1972. PC $3/MF $0.95.

Patent application 292,232. Recovery of Metal Values from Chrome Etching Solutions. Filed October 3, 1972. PC $3/MF $0.95.

Patent application. 279,903. Flotation of Pyrite from Coal. Filed August 11, 1972. PC $3/MF $0.95.

Patent application 277,016. Production of Cuprous Oxide. Filed August 1, 1972. PC $3/MF $0.95.

Patent application 286,627. Mine Wall Coating. Filed September 6, 1972. PC $3/MF $0.95.

Patent application 280,923. Solvent Extraction Procedure for Separating Metal Values. Filed August 15, 1972. PC $3/MF $0.95.

Patent application 275,382. Production of Magnetic Fluids by Peptization Techniques. Filed July 26, 1972. PC $3.25/MF $0.95.

Patent application 219,742. Photomechanical Method and Apparatus. Filed January 21, 1972. PC $3.75/MF $0.95.

Patent application 273,667. Production of Low-Sulfur Fuel from Sulfur-Bearing Coals and Oils. Filed July 20, 1972. PC $3/MF $0.95.

Patent application 281,353. Electrodeposition of Metallic Boride Coatings. Filed August 17, 1972. PC $3/MF $0.95.

Patent application 271,340. Recovery of Copper and Steel from Scrap. Filed July 13, 1972. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 290,915. Low Loss Dichoic Plate. Filed September 21, 1972. PC $3/MF $0.95.

Patent application 310,034. Digital Communication System. Filed November 28, 1972. PC $3.50/MF $0.95.

Patent application 290,030. Digital Second Order Phase Locked Loop. Filed September 18, 1972. PC $3/MF $0.95.

Patent application 290,022. Dual Frequency Microwave Reflex Feed. Filed September 18, 1972. PC $3/MF $0.95.

Patent application 292,681. Controlled Oscillator System. Filed September 27, 1972. PC $3/MF $0.95.

Patent application 301,419. Heat Exchanger System and Method. Filed October 27, 1972. PC $3/MF $0.95.

Patent application 307,728. Steady State Thermal Radiometer. Filed November 17, 1972. PC $3/MF $0.95.

Patent application 810,576. Air Removal Device. Filed March 26, 1972. PC $3/MF $0.95.

Patent application 307,729. Apparatus for Inserting and Removing Specimens from High Temperature Vacuum Furnaces. Filed November 17, 1972. PC $3/MF $0.95.

Patent application 292,477. Program for Computer Aided Reliability Estimation. Filed September 26, 1972. PC $4.50/MF $0.95.

Patent application 308,363. Device to Prevent Clogging in a Hopper. Filed November 21, 1972. PC $3/MF $0.95.

TENNESSEE VALLEY AUTHORITY

Patent 3,703,364. Production of Oil-Prilled Fertilizer Materials. Filed April 8, 1971. Patented November 21, 1972. Not available NTIS.

[FR Doc. 73-3708; Filed 2-27-73; 8:45 am]

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,675,310. Soldering Method. Filed April 20, 1971. Patented July 11, 1972. Not available NTIS.

Patent 3,710,925. Centrifugal Stower. Filed May 6, 1971. Patented January 16, 1973. Not available NTIS.

Patent application 302,960. Measuring Apparatus for Spatially Modulated Reflected Beams. Filed November 1, 1972. PC $3/MF $0.95.

Patent application 302,959. Angular Deviation Measuring Device and Its Method of Use. Filed November 1, 1972. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 308,362. Dielectric Loaded Aperture Antenna. Filed November 21, 1972. PC $3/MF $0.95.

[FR Doc. 73-4189; Filed 3-6-73; 8:45 am]

U.S. DEPARTMENT OF THE INTERIOR

Patent 3,679,973. Electrogasdynamic Dust Monitor. Filed October 20, 1970. Patented July 25, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 302,720. Active Air Cushion Control System Minimizing Vertical Cushion Response. Filed November 1, 1972. PC $3/MF $0.95.

Patent application 298,157. Image Tube. Filed October 16, 1972. PC $3/MF $0.95.

Patent application 313,381. Mossbauer Spectrometer Radiation Detector. Filed December 8, 1972. PC $3/MF $0.95.

Patent application 310,616. Automatic Quadrature Control and Measuring System. Filed November 29, 1972. PC $3/MF $0.95.

Patent application 305,012. Temperature Compensated Digital Inertial Sensor. Filed November 9, 1972. PC $3.50/MF $0.95.

Patent application 305,638. Light Shield and Cooling Apparatus. Filed November 10, 1972. PC $3/MF $0.95.

Patent application 313,390. Emergency Master Control Valve. Filed December 8, 1972. PC $3/MF $0.95.

Patent application 294,738. Control for Nuclear Thermionic Power Source. Filed October 3, 1972. PC $3/MF $0.95.

Patent application 310,611. Structural Panel. Filed November 29, 1972. PC $3/MF $0.95.

TENNESSEE VALLEY AUTHORITY

Patent 3,711,268. Stabilization of Polyphosphate Fertilizer Solutions. Filed May 7, 1971. Patented January 16, 1973. Not available NTIS.

[FR Doc. 73-5251; Filed 3-20-73; 8:45 am]

U.S. DEPARTMENT OF THE INTERIOR

Patent application 323,557. Production of Niobium and Tantalum. Filed January 15, 1973. PC $3/MF $0.95.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Patent application 31,175. Programmable Physiological Infusion. Filed December 1, 1972. PC $3/MF $0.95.

Patent application 288,857. Hand-Held Photomicroscope. Filed September 13, 1972. PC $3/MF $0.95.

Patent application 305,639. Magnetocaloric Pump. Filed November 10, 1972. PC $3/MF $0.95.

Patent application 302,681. Explosively Welded Scarf Joint. Filed November 1, 1972. PC $3/MF $0.95.

[FR Doc. 73-5734; Filed 3-27-73; 8:45 am]

PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office, either on the basis of 4 years or more service in the Examining Corps; under Rule 341(e) of the "Rules of Practice of the United States Patent Office in Patent Cases"; or, having passed the examination for registration to practice before the Patent Office, held on September 12, 1972. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before May 18, 1973.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Anderson, Louise P., 1900 S. Eads St., #1031, Arlington, Va. 22202
Anderson, Stanley E., Jr., 1900 S. Eads St., #1031, Arlington, Va. 22202
Beach, William I., 6129 S. Mansfield Ave., Los Angeles, Calif. 90043
Bhogaraju, Sarojini, 2300 S. 24th Road., #225, Arlington, Va. 22202
Borovian, Joseph J., P.O. Box 135, Fairview, N.J. 07022
Cochran, William W. II, 5900 Ryland Drive, Bethesda, Md. 20014
Ditzel, Roger G., 2323 McKinley Circle, Ames, Iowa 50010
Hart, Don A., Office of Naval Research, 760 Market St., San Francisco, Calif. 94102
Horwitz, Harold C., 1819 N. Broadway, Santa Ana, Calif. 92706
Kasa, Pamela D., 11 Cadman Plaza West, Brooklyn, N.Y. 11201
Klem, Stanley J., 321 Elm St., Vestal, N.Y. 13850
Knox, William, 8310 Ashcroft Drive, Houston, Tex. 77035
Koch, Robert J., 2111 Jefferson Davis Hwy., Arlington, Va. 22202
Krieg, Marc S., 75—25 150th St., Flushing, N.Y. 11367
Lappin, Mark G., 5805 Stearns Hill Road, Waltham, Mass. 02154
Loiselle, Arthur A., Jr., 7 Hycrest Drive, Worcester, Mass. 01606
Lorin, Charles M., 1613 Old Beulah Road, Pittsburgh, Pa. 15235
Mahoney, Donald E., 27 Lynnfield Drive, Hightstown, N.J. 08540
McConnell, David G., 5915 N. Western Ave., Peoria, Ill. 61614
Menelly, Richard A., 18 Hyde St., Danvers, Mass. 01923
Policinski, Henry J., 18826 Sunnybrook, Lathrup Village, Mich. 48076
Powell, Maynard A., Esperson Bldg., Houston, Tex. 77002
Quinlan, David M., 3201 Landover St., #1421, Alexandria, Va. 22305
Richbourg, James R., 4641 Capitola Ave., San Jose, Calif. 95111
Riley, Reed F., 434 W. Webster St., Chicago, Ill. 60614
Rushton, George L., 6 Merritt Drive, Trenton, N.J. 08638
Rymek, Edward, 275 Slater St., Rm. 1816, Ottawa, Ontario, Canada
Schmidt, Edward P., 124 Lake Drive W., Wayne, N.J. 07470
Sheehan, William J., 13416 Hillendale Drive, Woodbridge, Va. 22191
Smith, Charles E., 31 Brook Hill Lane, #B, Rochester, N.Y. 14625
Strnad, Elizabeth E., 3133 Bowling Green Drive, Walnut Creek, Calif. 94598
Sturgeon, Edward A. II, 241 N. Spruce Drive, Anaheim, Calif. 92705
Talshoff, Howard A., 105 Oxford Blvd., Great Neck, N.Y. 11023
Vasta, Vincent J., Jr., 1308 Crosby Ave., Bronx, N.Y. 10461
Veeder, David A., 2306 Hoover Ave., Billings, Mont. 59102
Warren, William Z., Box 33, Bethel, Pa. 19507
White, Stephen W., 892 Holmdel Road, Holmdel, N.J. 07733
Young, Harrison H., Jr., 130 Longview Drive, Princeton, N.J. 08540
Zobkiw, David J., 233 Palmdale, #1, Williamsville, N.Y. 14221

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Abandonment of Application

A proposal was published at 37 FR 18391 to revise § 2.68. Full consideration has been given to all comments received pursuant to this notice and changes in the text of the original proposal have been made in view thereof.

The revision of § 2.68 permits an attorney or other person representing the applicant to abandon or withdraw an application. Prior to this revision, the applicant was required to sign the statement of abandonment. The rule is further revised by the addition of a sentence which indicates that in a Patent Office proceeding, abandonment of the application does not affect any rights which the applicant may have in the mark. The word "withdrawal" which has been added to the rule is synonymous with the word "abandonment" in the context of this rule and may be used by those who prefer to do so.

Effective date. This revision shall become effective on March 27, 1973.

Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is amended by revising § 2.68 to read as follows:

§ 2.68 *Express abandonment (withdrawal) of application.*

An application may be expressly abandoned by filing in the Patent Office a written statement of abandonment or withdrawal of the application signed by the applicant, or the attorney or other person representing the applicant. The fact that an application has been expressly abandoned shall not, in any proceeding in the Patent Office, affect any rights that the applicant may have in the mark which is the subject of the abandoned application.

Dated: Mar. 15, 1973.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Approved:

RICHARD O. SIMPSON,
Acting Assistant Secretary for Science and Technology.

[FR Doc. 73-5768; Filed 3-26-73; 8:45 am]

Published in 38 F.R. 7985; Mar. 27, 1973

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,690,610, Begle and Gaudreau, MILLING CUTTER; **3,273,222**, J. H. Begle, CUTTING TOOL AND METHOD; **3,487,535**, same, METHOD OF ASSEMBLING AND MAINTAINING CUTTING TOOL, filed Feb. 4, 1972, D.C., E.D. Mich. (Detroit), Doc. 37792, *Kysor Industrial Corporation* v. *Indexomatic, Inc. and Thomas C. Meggs.* On joint motion and order dismissed with prejudice, Dec. 1, 1972. Same, filed Aug. 16, 1972, D.C., E.D. Mich. (Detroit), Doc. 38759, *Kysor Industrial Corp.* v. *Supreme Tri-Bit Co. and Norman H. Liebert.* on joint motion and order dismissed with prejudice, Nov. 30, 1972.

2,729,551, C. C. Cohn, SURFACE TREATMENT OF ALUMINUM AND ITS ALLOYS, filed Nov. 20, 1972, D.C. Del. (Wilmington), Doc. 4520, *Colonial Alloys Company (a partnership of Samuel L. Cohn and Charles C. Cohn)* v. *Howmet Corporation.*

2,762,777, Went, Van Oosterhout and Gorter, PERMANENT MAGNET AND METHOD OF MAKING THE SAME; **2,762,778**, Gorter, Rathenau and Stuyts, METHOD OF MAKING MAGNETICALLY-ANISOTROPIC PERMANENT MAGNETS, filed Nov. 17, 1972, D.C., N.D. Ohio (Toledo), Doc. C-72-414, *U.S. Philips Corporation* v. *Ferro Corporation.*

2,762,778. (See 2,762,777.)

2,788,613, Gelfand and Noble, INERTIA-PROPELLED TOY VEHICLE AND LAUNCHING RUNWAY, filed Oct. 10, 1972, D.C., S.D.N.Y., Doc. 72-C-4484, *Ideal Toy Corporation* v. *Remco Industries, Inc.*

2,810,424, Swartswelter and Kullgren, METHOD AND APPARATUS FOR MAKING REINFORCED PLASTIC TUBING, filed Dec. 6, 1972, D.C., S.D. Fla. (Miami), Doc. 72-1935-C-PF, *Cook, Inc.* v. *Cordis Corporation.*

2,881,788, A. J. Johnson, VALVE WHICH CLOSES AGAINST INTERNAL PRESSURE, filed Nov. 15, 1972, D.C. Oreg. (Portland), Doc. 72-930, *R. H. Pierce Mfg. Company* v. *Berg Bros. and Anderson-Miller Mfg. Company, doing business as A-M Mfg. Company.*

2,900,638, O. O'Kelley, APPARATUS FOR DRIVING JOINT NAILS; **2,947,990,** same, APPARATUS FOR FORMING AND DRIVING JOINT NAILS; **3,597,142,** L. Jasper, AUTOMATIC NAILING MACHINE, **filed** Oct. 6, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–2391–HP, *Lane Jasper* v. *Ri-Mat Enterprises Inc. et al.*

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, **filed** Dec. 11, 1972, D.C., M.D. Pa. (Scranton), Doc. C–72–612, *Edward T. Molinaro and Anthony P. Catanzaro* v. *Sears, Roebuck and Company.*

2,947,990. (See 2,900,638.)

3,051,464, Yeo and Waid, AIR-HEATING GAS BURNER; **Re. 25,626,** same, **filed** Nov. 21, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2942, *Eclipse Fuel Eng. Co.* v. *Maxon Corporation.*

3,073,536, J. N. Quinn, PORTABLE CRUSHING PLANT; **3,400,235,** same, **filed** Nov. 17, 1972, D.C., E.D. Wis. (Milwaukee), Doc. 72–C–634, *John N. Quinn and Johnson Welding & Equipment Co., Inc.* v. *Lippmann, Inc. and Edmind Lippmann & Gladys Lippmann, doing business as Gilco Co.*

3,083,393, J. J. Nappi, SHOE SOLE CLEANER; **3,665,543,** same, TACKY MAT STACK, **filed** Nov. 17, 1972, D.C., N.D. Tex. (Dallas), Doc. CA–3–6511–D, *Arbrook, Inc. and John J. Nappi* v. *American Hospital Supply Corporation.*

3,159,897, Ellis and Thorsteinson, MACHINE FOR EXTRUDING HOLLOW CORED CONCRETE SECTIONS; **3,284,867,** G. Booth, MACHINES FOR FORMING HOLLOW CORED CONCRETE PRODUCTS, **filed** Sept. 14, 1972, D.C. (District of Columbia), Doc. 1848–72, *The George Hyman Construction Co.* v. *Spiroll Corporation, Ltd.*

3,204,324, F. Nilsen, METHOD FOR MAKING AN INSULATED FRAME CONSTRUCTION; **3,624,885,** Holliday and Barker, APPARATUS FOR MAKING A THERMALLY INSULATING JOINT CONSTRUCTION AND AN ADJUSTABLE GUIDE ASSEMBLY FOR USE THEREWITH, **filed** Oct. 27, 1972, D.C., E.D. Mich. (Detroit), Doc. 39126, *Reynolds Metals Co.* v. *Acron Bldg. Components Inc.*

3,222,715, E. J. Harris, APPARATUS FOR LOADING GREEN TIRES IN A TIRE PRESS; **3,223,767,** same, METHOF OF LOADING A TIRE IN A TIRE PRESS, **filed** Dec. 7, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–1310, *Edward J. Harris* v. *NRM Corporation et. al.*

3,223,767. (See 3,222,715.)

3,251,016, Manetti and Brugger, ELECTRON TUBE SOCKETS; **3,543,098,** Simovits, Dumas and Manetti, ELECTRON TUBE SOCKET ASSEMBLY, **filed** Apr. 1, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c813, *American Plasticraft Co.* v. *Permonite Mfg. Co.* Pursuant to stipulation under Rule 41(a), cause dismissed with prejudice, Dec. 7, 1972.

3,273,222. (See 2,690,610.)

3,284,867. (See 3,159,897.)

3,304,636, Viecelli and Walczak, HEATING AND STEAM GENERATING SUBASSEMBLY FOR A PRESSING IRON; **3,335,507,** J. S. Viecelli, same; **3,541,306,** Barnas and Gronwick, ELECTRIC PRESSING IRON; **3,599,357,** Gronwick and Westphal, same; **3,691,660,** Gronwick, Illian and Westphal, same, **filed** Dec. 7, 1972, D.C. Del. (Wilmington), Doc. 4533, *Scovill Manufacturing Company* v. *Sunbeam Corporation.*

3,335,507. (See 3,304,686.)

3,393,372, Vickery and Fisher, CARBON DIOXIDE LASER SYSTEMS FOR THE EMISSION OF COHERENT RADIATION, **filed** Dec. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c3050, *Semi-Elements Inc. et al.* v. *Motorola, Inc.*

3,409,235. (See 3,073,536.)

3,432,793, Muska, Schacker and McHattie, GROUNDING CONNECTION FOR ELECTRICAL UNIT, **filed** Sept. 8, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c2234, *William A. Muska, James L. Schacker, and Earl E. McHattie* v. *Sierra Elec.* Plaintiff voluntarily dismissed the proceedings, Dec. 8, 1972.

3,487,535. (See 2,690,610.)

3,499,305, T. W. Abernathy, ROLLING MILL AND METHOD OF ROLLING STRIPS; **3,534,576,** Abernathy and Lindsay, TAPER ROLLING MILL; **3,535,903,** same, ROLL FORMING APPARATUS HAVING ROLLS WITH RADIALLY AND AXIALLY YIELDABLE FORMING MEMBERS, **filed** Nov. 3, 1970, D.C., C.D. Calif. (Los Angeles), Doc. 70–2471–ALS, *Tronchemics Research Inc. and PRP Corporation* v. *Northrop Corporation.* Dismissed for want of prosecution, Nov. 20, 1972.

3,534,576. (See 3,499,305.)

3,535,903. (See 3,499,305.)

3,541,306. (See 3,304,636.)

3,543,098. (See 3,251,016.)

3,576,099, R. S. Walton, SOLID STATE TIME PIECE HAVING ELECTRO OPTICAL TIME DISPLAY; **3,644,118,** same, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; **3,672,155,** Bergey and Walton, SOLID STATE WATCH, **filed** Oct. 6, 1972, D.C., S.D.N.Y., Doc. 72–C–4261, *HMW Industries Inc.* v. *Uranus Electronics, Inc. and Elgin National Industries, Inc.*

3,597,142. (See 2,900,638.)

3,599,357. (See 3,304,636.)

3,613,044, W. G. Rarick, POWER SUPPLY CORD HATCH, **filed** Dec. 11, 1972, D.C., N.D. Ind. (South Bend), Doc. 72S248, *Lyall Electric, Inc.* v. *Mid American Sales Co., Inc. and Guy P. Bassi.*

3,624,885. (See 3,204,324.)

3,646,574, H. S. Holzer, COMPATIBLE STEREO GENERATOR, **filed** Aug. 25, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1967–RJK, *Howard S. Holzer* v. *Parasound, Inc. and Kurt Orban Company, Inc.*

3,644,118. (See 3,576,099.)

3,665,543. (See 3,083,393.)

3,672,155. (See 3,576,099.)

3,691,660. (See 3,304,636.)

Re. 25,626. (See 3,051,464.)

Certificates of Correction for the Week of Apr. 24, 1973

Re. 27,170	3,660,049	3,689,534	3,698,914
Re. 27,488	3,661,567	3,690,106	3,698,955
2,837,773	3,661,978	3,690,155	3,699,121
3,453,941	3,662,063	3,690,298	3,699,125
3,535,070	3,662,301	3,690,765	3,699,162
3,572,498	3,662,340	3,690,982	3,699,401
3,591,451	3,667,955	3,691,127	3,699,480
3,583,399	3,668,258	3,691,265	3,699,619
3,609,209	3,669,913	3,693,770	3,699,621
3,619,142	3,671,240	3,694,202	3,700,096
3,621,735	3,671,401	3,694,329	3,700,324
3,622,530	3,671,536	3,694,399	3,700,361
3,623,644	3,673,608	3,694,507	3,700,958
3,624,115	3,674,483	3,694,632	3,701,042
3,624,445	3,674,703	3,694,945	3,701,138
3,624,786	3,674,872	3,695,569	3,701,277
3,627,005	3,675,632	3,695,633	3,701,284
3,628,595	3,678,041	3,606,075	3,701,336
3,628,596	3,678,298	3,696,220	3,701,356
3,628,974	3,678,958	3,696,250	3,701,577
3,629,933	3,679,230	3,696,340	3,701,715
3,633,915	3,680,432	3,696,626	3,702,020
3,635,293	3,680,925	3,696,655	3,702,731
3,636,352	3,681,323	3,696,802	3,702,939
3,638,455	3,681,325	3,696,864	3,703,360
3,640,200	3,682,474	3,696,933	3,703,471
3,640,576	3,682,614	3,697,379	3,703,776
3,641,098	3,683,331	3,697,566	3,703,777
3,647,531	3,684,522	3,697,575	3,703,828
3,647,544	3,684,830	3,697,595	3,703,895
3,648,063	3,685,564	3,697,596	3,704,062
3,648,205	3,686,639	3,697,720	3,704,189
3,650,667	3,687,184	3,697,723	3,704,259
3,651,057	3,687,725	3,697,759	3,704,301
3,654,916	3,687,784	3,697,901	3,704,321
3,655,401	3,687,885	3,697,939	3,704,448
3,655,404	3,689,117	3,698,137	3,705,399
3,657,444	3,689,320	3,698,523	3,719,419
3,659,636	3,689,511	3,698,862	

Patents Available for Licensing or Sale

D. 225,039. RETRACTIBLE CLIP-ON PACIFIER. Irene Sauritis, 710 Richfield Ave., Kenilworth, N.J., 07033.

3,465,373. HOSPITAL BED. Harriet A. Wilson, 115 Hilltop Road, Waverly, Pa., 18471.

3,636,938. PORTABLE COOKING GRILL. Edward J. Faltersack. 19517 Almaden Road, San Jose, Calif., 95120.

3,695,658. GLARE-SHIELD. Fred Vacha, 226 Lombardy Ave., Fort Lauderdale, Fla., 33308.

3,709,513. TROLLEY SUITCASE. K. A. I. Cassimally, 210 3rd St. W., Roundup, Mont., 59072.

3,712,047. TIME DISPLAY DEVICE FOR TIMEPIECES. Pierre Girard. Correspondence to: Stevens, Davis et al., 1911 Jefferson Davis Hwy., Arlington, Va., 22202.

3,718,241. SAFETY BELT. John D. Forsythe, 1543 Dougall Ave., Windsor, Ontario, Canada, N8X 152.

The following patent is available for non-exclusive license on reasonable terms.
Inquiries should be addressed to: Henry Reitler, P.O. Box 785, Nashville, Tenn., 37202.

3,195,125. TELEVISION AID TO AIRCRAFT INSTRUMENT LANDING.

The following 6 patents are offered by: The Horstman Gear Co., Ltd., Newbridge Works, Bath, Somerset, England.

3,565,009. CHEQUE SIGNING MACHINE.

3,573,620. SECURITY SYSTEM WITH INDUCTIVE TO RF COMMUNICATIONS LINKS.

3,579,221. ALARM SYSTEM.

3,577,079. WATCHMAN'S RADIO LOCATION INDICATING SYSTEM.

3,539,821. TRANSDUCER OPERATED SWITCHES.

3,478,181. ELECTRIC CIRCUIT CONTROLLERS INCORPORATING TIMESWITCHES.

The following 6 patents are offered by: Bruce B. Krost, 754 Union Commerce Bldg., Cleveland, Ohio, 44115.

3,581,395. TOOL FOR INTERNALLY CUTTING A TUBE AT AN ANGLE TO THE AXIS THEREOF.

3,677,255. ELECTRICAL IGNITION SYSTEM.

2,925,787. AUTOMATIC DISPATCH.

3,039,029. CONTROL APPARATUS FOR ELECTRICAL SYSTEMS.

3,006,464. DRAWING PLUG.

3,292,407. TUBE DRAWING APPARATUS.

Rockwell International Corporation is prepared to grant non-exclusive licenses under the following 2 patents upon reasonable terms.
Application for license may be addressed to Rockwell International Corporation, Los Angeles, Aircraft Division, International Airport, Los Angeles, Calif., 90009, Attn: Div. Patent Counsel.

3,444,603. ROLL DIFFUSION BONDING METHOD.

3,350,252. ROLL DIFFUSION BONDING METHOD.

RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 32 patents.
Inquiries respecting licenses under the RCA patents should be addressed to: RCA Corporation, Staff Vice President, Domestic Licensing, 1133 Avenue of Americas, New York, N.Y., 10036.

3,708,418. APPARATUS FOR ETCHING OF THIN LAYERS OF MATERIAL BY ION BOMBARDMENT.

3,708,615. GAMMA CORRECTION BANDPASS AMPLIFIER CIRCUITS.

3,708,622. CATHODE-RAY TUBE WITH LAMINATED SAFETY PANEL AND SEPARATE LIGHT-ATTENUATING LAYER.

3,708,655. ARTICLE IDENTIFICATION APPARATUS.

3,708,712. INTELLIGENCE-HANDLING DEVICE HAVING MEANS FOR LIMITING INDUCED ELECTROSTATIC POTENTIAL.

3,709,206. REGULATED IGNITION SYSTEM.

3,710,140. FLIP-FLOP AND HOLD PHASE DETECTOR.

3,710,167. ORGANIC ELECTROLUMINESCENT CELLS HAVING A TUNNEL INJECTION CATHODE.

3,710,202. HIGH FREQUENCY POWER TRANSISTOR SUPPORT.

3,710,283. APPARATUS FOR EFFICIENTLY CONVERTING MICROWAVE ENERGY INTO ACOUSTIC ENERGY.

3,710,303. EDGE CONNECTOR.

3,711,001. WEB POSITION DETECTOR USING TEMPERATURE SENSING ELEMENTS.

3,711,641. VELOCITY ADJUSTING SYSTEM.

3,711,720. AUTOMATIC BRIGHTNESS CONTROL FOR IMAGE INTENSIFIER TUBE.

3,711,738. HIGH VOLTAGE AND WIDTH REGULATION CIRCUIT.

3,711,763. OVERCURRENT PROTECTION CIRCUIT FOR A VOLTAGE REGULATOR.

3,711,793. HIGH POWER MICROWAVE SWITCH INCLUDING A PLURALITY OF DIODES AND CONDUCTIVE RODS.

3,712,147. MECHANICAL DRIVE MECHANISM WITH PROGRAMMABLE OUTPUT FUNCTION.

3,712,700. METHOD OF MAKING AN ELECTRON EMITTER DEVICE.

3,712,733. MAGNETO-ELECTRIC APPARATUS FOR REPRODUCING AN IMAGE ON A RECORDING ELEMENT.

3,712,995. INPUT TRANSIENT PROTECTION FOR COMPLEMENTARY INSULATED GATE FIELD EFFECT TRANSISTOR INTEGRATED CIRCUIT DEVICE.

3,713,111. OPERATION OF MEMORY ARRAY EMPLOYING VARIABLE THRESHOLD TRANSISTORS.

3,713,140. DECODER FOR DELAY MODULATION SIGNALS.

3,713,822. PYROELECTRIC PHOTOCONDUCTIVE ELEMENTS AND METHOD OF CHARGING SAME.

3,713,884. METHOD FOR PREPARING A CONDUCTIVE COATING ON A GLASS SURFACE.

3,713,886. ENCAPSULATED MAGNETIC MEMORY ELEMENT.

3,714,490. LUMINESCENT SCREEN COMPRISING PHOSPHOR CORES LUMINESCENT IN FIRST COLOR AND PHOSPHOR COATINGS LUMINESCENT IN SECOND COLOR.

3,714,491. QUADRANT PHOTODIODE.

3,714,521. SEMICONDUCTOR DEVICE OR MONOLITHIC INTEGRATED CIRCUIT WITH TUNGSTEN INTERCONNECTIONS.

3,714,572. ALIGNMENT AND TEST FIXTURE APPARATUS.

3,714,583. MUTING CIRCUIT.

3,714,638. CIRCUIT FOR IMPROVING OPERATION OF SEMICONDUCTOR MEMORY.

General Electric Company is prepared to grant non-exclusive licenses under the following 245 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following 4 patents should be addressed to: Patent Counsel Construction Materials Business Division, General Electric Company, 1285 Boston Ave., Bridgeport, Conn., 06602.

3,631,519. STRESS GRADED CABLE TERMINATION.

3,639,529. METHOD FOR MANUFACTURING CROSS-LINKED CHLORINATED POLYMERIC SYSTEMS.

3,644,662. STRESS CASCADE-GRADE CABLE TERMINATION.

3,665,602. HAND CUTTING TOOL.

Applications for license under the following 8 patents may be addressed to: General Electric Co., Appliance Components Business Division, 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

3,172,197. METHOD OF ACHIEVING ALIGNMENT OF BALL BEARINGS AND SHAFT COMPONENTS.

3,195,222. METHOD OF ASSEMBLING DYNAMOELECTRIC MACHINES.

3,359,628. METHOD OF PRODUCING MACHINES HAVING PROPER FREEDOM OF REVOLUTION FOR ROTATABLE ASSEMBLIES THEREIN.

3,633,056. STATOR SLOT AND WINDING ARRANGEMENTS.

3,659,337. APPARATUS AND METHOD FOR TYING COILS.

3,670,408. METHOD OF MAINTAINING A LAMINATED ARTICLE UNDER COMPRESSION DURING A PART OF ITS MANUFACTURE.

3,686,618. LAMPHOLDER.

3,701,877. METHOD AND APPARATUS FOR MAKING ELECTRICAL CONNECTIONS.

Applications for license under the following 233 patents may be addressed to: Patent Counsel Semiconductor Products Department, General Electric Co., Electronics Park, Bldg. #7, Syracuse, N.Y., 13201.

3,016,313. SEMICONDUCTOR DEVICES AND METHODS OF MAKING SAME.

3,020,129. PRODUCTION OF SILICON OF IMPROVED PURITY.

3,021,461. SEMICONDUCTOR DEVICE.

3,030,704. NON-RECTIFYING CONTACTS TO SILICON CARBIDE.

3,065,391. SEMICONDUCTOR DEVICES.

3,110,849. TUNNEL DIODE DEVICE.

3,116,183. ASYMMETRICALLY CONDUCTIVE DEVICE.

3,124,703. SEMICONDUCTOR DEVICES.

3,132,408. METHOD OF MAKING SEMICONDUCTOR STRAIN SENSITIVE DEVICES.

3,135,585. METHOD OF GROWING DISLOCATION-FREE SEMICONDUCTOR CRYSTALS.

3,146,204. PREPARATION OF II–VI SEMICONDUCTING COMPOUNDS BY SOLVENT EXTRACTION.

3,160,798. SEMICONDUCTOR DEVICES INCLUDING MEANS FOR SECURING THE ELEMENTS.

3,172,068. SEMICONDUCTOR DEVICE.

3,176,149. SOLID STATE CIRCUIT INTERRUPTER.

3,176,163. SOLID STATE CIRCUIT INTERRUPTER HAVING A MULTILAYER SWITCHING DEVICE AND TUNNEL DIODE CURRENT SENSING MEANS THEREFOR.

3,184,633. SEMICONDUCTIVE ELECTRON MULTIPLIER.

3,197,839. METHOD OF FABRICATING SEMICONDUCTOR DEVICES.

3,200,017. GALLIUM ARSENIDE SEMICONDUCTOR DEVICES.

3,201,227. METHOD OF PREPARING READILY DECOMPOSABLE MATERIALS.

3,201,666. NON-RECTIFYING CONTACTS TO SILICON CARBIDE.

3,216,942. N-TYPE SEMICONDUCTING CUBIC BORON NITRIDE.

3,232,799. METHOD OF DETERMINING THE THICKNESS OF EPITAXIALLY DEPOSITED LAYERS OF MATERIAL.

3,235,937. LOW COST TRANSISTOR.

3,237,064. SMALL PN-JUNCTION TUNNEL-DIODE SEMICONDUCTOR.

3,239,728. SEMICONDUCTOR SWITCH.

3,242,551. SEMICONDUCTOR SWITCH.

3,243,267. GROWTH OF SINGLE CRYSTALS.

3,243,274. METHOD OF FORMING SILICON ARTICLE.

3,244,040. SEMICONDUCTOR LEAD WIRE HANDLING.

3,249,473. USE OF METALLIC HALIDE AS A CARRIER GAS IN THE VAPOR DEPOSITION OF III–V COMPOUNDS.

3,249,764. FORWARD BIASED NEGATIVE RESISTANCE SEMICONDUCTOR DEVICES.

3,249,826. SEMICONDUCTOR DEVICE MOUNTING HAVING ONE PORTION OF THE SEMICONDUCTOR SECURED TO A LEAD.

3,253,196. UNIJUNCTION TRANSISTORS.

3,261,730. METHOD OF FORMING GALLIUM ARSENIDE SEMICONDUCTOR DEVICES.

3,265,469. CRYSTAL GROWING APPARATUS.

3,265,909. SEMICONDUCTOR SWITCH COMPRISING A CONTROLLED RECTIFIER SUPPLYING BASE DRIVE TO A TRANSISTOR.

3,268,309. SEMICONDUCTOR CONTACT MEANS.

3,270,562. SOLID STATE HYDROSTATIC PRESSURE GAUGE.

3,271,700. SOLID STATE SWITCHING CIRCUITS.

3,275,907. SEMICONDUCTOR DEVICE MOUNTING WITH EMBEDDED THERMAL MATCHING CONTACT MEMBERS.

3,275,909. SEMICONDUCTOR SWITCH.

3,278,813. TRANSISTOR HOUSING CONTAINING PACKED, EARTHY, NONMETALLIC, ELECTRICALLY INSULATING MATERIAL.

3,282,749. METHOD OF CONTROLLING DIFFUSION.

3,284,675. SEMICONDUCTOR DEVICE INCLUDING CONTACT AND HOUSING STRUCTURES.

3,284,681. PNPN SEMICONDUCTOR SWITCHING DEVICES WITH STABILIZED FIRING CHARACTERISTICS.

3,291,578. METALLIZED SEMICONDUCTOR SUPPORT AND MOUNTING STRUCTURE.

3,292,128. SEMICONDUCTOR STRAIN SENSITIVE DEVICES.

3,293,449. SOLID STATE THYRATRON REPLACEMENT.

3,295,029. FIELD EFFECT SEMICONDUCTOR DEVICE WITH POLAR POLYMER COVERED OXIDE COATING.

3,297,920. SEMICONDUCTOR DIODE WITH INTEGRATED MOUNTING AND SMALL AREA FUSED IMPURITY JUNCTION.

3,303,360. SEMICONDUCTOR SWITCH.

3,316,130. EPITAXIAL GROWTH OF SEMICONDUCTOR DEVICES.

3,324,359. FOUR LAYER SEMICONDUCTOR SWITCH WITH THE THIRD LAYER DEFINING A CONTINUOUS, UNINTERRUPTED INTERNAL JUNCTION.

3,328,652. VOLTAGE COMPARATOR.

3,331,000. GATE TURN OFF SEMICONDUCTOR SWITCH HAVING A COMPOSITE GATE REGION WITH DIFFERENT IMPURITY CONCENTRATIONS.

3,332,143. SEMICONDUCTOR DEVICES WITH EPITAXIAL CONTOUR.

3,341,380. METHOD OF PRODUCING SEMICONDUCTOR DEVICES.

3,346,384. METAL IMAGE FORMATION.

3,346,784. MINIATURE RECTIFIER AND METHOD OF MANUFACTURE.

3,346,787. HIGH FREQUENCY TRANSISTOR WITH INTERNAL ANGULAR POSTS AND DIVERGENT, STIFF LEADS TO REDUCE INTERELECTRODE CAPACITANCE.

3,350,611. GATE FIRED BIDIRECTIONAL SWITCH.

3,354,312. PHASE CONTROL CIRCUITS FOR LIGHT ACTIVATED SWITCHES USING A VARIABLE RESISTOR WITH AN A.C. VOLTAGE ACROSS IT AS THE PHASE CONTROL.

3,354,361. SANDWICHED CONSTRUCTION FOR A TUNNEL DIODE.

3,354,363. PNPN SWITCH WITH $10<N_B/N_B<100$ SO THAT CONDUCTIVITY MODULATION RESULTS DURING TURN-OFF.

3,363,150. GLASS ENCAPSULATED DOUBLE HEAT SINK DIODE ASSEMBLY.

3,368,120. MULTILAYER CONTACT SYSTEM FOR SEMICONDUCTOR DEVICES.

3,368,122. SEMICONDUCTOR DEVICES.

3,368,179. TEMPERATURE COMPENSATED SEMICONDUCTOR STRAIN GAGE.

3,369,153. DEVICE FOR PROTECTING ELECTRICAL APPARATUS.

3,370,207. MULTILAYER CONTACT SYSTEM FOR SEMICONDUCTOR DEVICES INCLUDING GOLD AND COPPER LAYERS.

3,370,209. POWER BULK BREAKDOWN SEMICONDUCTOR DEVICES.

3,371,227. TRANSISTOR-S.C.R. CIRCUITRY PROVIDING A THYRATRON EQUIVALENT.

3,372,318. SEMICONDUCTOR SWITCHES.

3,372,672. PHOTOPOLYMERIZATION MEANS IN A VAPOR DEPOSITION COATING APPARATUS.

3,374,809. LEAD ORIENTOR.

3,375,416. SEMICONDUCTOR TUNNEL DIODE DEVICE.

3,375,417. SEMICONDUCTOR CONTACT DIODE.

3,379,625. SEMICONDUCTOR TESTING.

3,381,185. DOUBLE HEAT SINK SEMICONDUCTOR DIODE WITH GLASS ENVELOPE.

3,381,226. ZERO CROSSING SYNCHRONOUS SWITCHING CIRCUITS FOR POWER SEMICONDUCTORS.

3,391,310. SEMICONDUCTOR SWITCH.

3,401,107. METHOD OF MANUFACTURING SEMICONDUCTOR CAMERA TUBE TARGETS.

3,403,558. PIEZORESISTIVE THERMOMETER.

3,408,222. GLASS-SILICON ASSEMBLIES.

3,408,593. SCANNED LASER BEAM DEVICE.

3,408,732. METHOD OF FORMING A SEMICONDUCTOR DEVICE.

3,410,132. SEMICONDUCTOR STRAIN GAUGE.

3,413,527. CONDUCTIVE ELECTRODE FOR REDUCING THE ELECTRIC FIELD IN THE REGION OF THE JUNCTION OF A JUNCTION SEMICONDUCTOR DEVICE.

3,416,959. METHOD OF FORMING CARBON RESISTOR FILM.

3,417,246. FREQUENCY MODULATED SEMICONDUCTOR JUNCTION LASER.

3,417,248. TUNNELING SEMICONDUCTOR DEVICE EXHIBITING STORAGE CHARACTERISTICS.

3,427,512. SEMICONDUCTOR LOW VOLTAGE SWITCH.

3,428,870. SEMICONDUCTOR DEVICES.

3,432,753. METHOD OF ANALYZING MATERIALS TO DETERMINE THE IMPURITY CONTENT THEREOF.

3,434,023. SEMICONDUCTOR SWITCHING DEVICES WITH A TUNNEL JUNCTION DIODE IN SERIES WITH THE GATE ELECTRODE.

3,434,868. SILICON DIOXIDE COATINGS UTILIZING A PLASMA.

3,436,679. SEMICONDUCTOR JUNCTION LASER WITH ELECTRONICALLY DISPLACEABLE AND DEFLECTABLE BEAM.

3,438,668. CONTACTLESS LIFTER.

3,439,235. EPOXY ENCAPSULATED SEMICONDUCTOR DEVICE.

3,439,237. ANALOGUE UNIJUNCTION DEVICE.

3,448,351. CRYOGENIC AVALANCHE PHOTODIODE OF InSb WITH NEGATIVE RESISTANCE CHARACTERISTIC AT POTENTIAL GREATER THAN REVERSE BREAKDOWN.

3,449,641. EPOXY ENCAPSULATED SEMICONDUCTOR DEVICE WHEREIN THE ENCAPSULANT COMPRISES AN EPOXY NOVOLAK.

3,451,867. PROCESSES OF EPITAXIAL DEPOSITION OR DIFFUSION EMPLOYING A SILICON CARBIDE MASKING LAYER.

3,452,252. DEVICE FOR PROTECTING ELECTRICAL APPARATUS.

3,456,131. SEQUENTIAL FLASHER CIRCUITS.

3,457,631. METHOD OF MAKING A HIGH FREQUENCY TRANSISTOR STRUCTURE.

3,462,657. PROTECTION MEANS FOR SURFACE SEMICONDUCTOR DEVICE HAVING THIN OXIDE FILMS THEREIN.

3,463,936. SEQUENTIAL LOAD ENERGIZING CIRCUIT.

3,463,970. INTEGRATED SEMICONDUCTOR RECTIFIER ASSEMBLY.

3,465,417. ALLOY-JUNCTION AND METAL-SEMICONDUCTOR DIODE FABRICATION METHOD.

3,466,529. ALTERNATING CURRENT POWER CONTROL CIRCUIT.

3,471,291. PROTECTIVE PLATING OF OXIDE-FREE SILICON SURFACE.

3,476,918. CARD AND TAPE READER.

3,476,993. FIVE LAYER AND JUNCTION BRIDGING TERMINAL SWITCHING DEVICES.

3,479,234. METHOD OF PRODUCING FIELD EFFECT TRANSISTORS.

3,479,573. WIDE BAND GAP SEMICONDUCTOR DEVICES HAVING IMPROVED TEMPERATURE INDEPENDENT NON-RECTIFYING CONTACTS.

3,480,843. THIN-FILM STORAGE DIODE WITH TELLURIUM COUNTERELECTRODE.

3,481,796. METHOD OF PRODUCING HOMOGENEOUS CRYSTALS OF CONCENTRATED ANTIMONY-BISMUTH SOLID SOLUTIONS.

3,482,119. REGULATED NUCLEATING POSITION TWO-VALLEY ELECTRO-TRANSFER EFFECT DEVICE.

3,482,177. TRANSISTOR DIFFERENTIAL OPERATIONAL AMPLIFIER.

3,482,189. FREQUENCY CONTROL OF SEMICONDUCTIVE JUNCTION LASERS BY APPLICATION OF FORCE.

3,482,974. METHOD OF PLATING GOLD FILMS ONTO OXIDE-FREE SILICON SUBSTRATES.

3,482,975. PHOTOETCHING OF GOLD.

3,482,976. PHOTOLYTIC ETCHING OF GOLD.

3,483,108. METHOD OF CHEMICALLY ETCHING A NONCONDUCTIVE MATERIAL USING AN ELECTROLYTICALLY CONTROLLED MASK.

3,484,626. SEQUENTIAL FLASHER CIRCUITS.

3,484,713. TWO-STAGE SEMICONDUCTOR COHERENT RADIATION SOURCE.

3,485,630. METHOD OF ETCHING A METAL LAYER COATED WITH A LAYER CONTAINING A PHOTOLYTIC HALOGEN LIBERATOR AND A BLEACHABLE ORGANIC DYE.

3,489,563. PHOTOLYTIC ETCHING OF NICKEL-CHROMIUM ALLOY.

3,489,564. PHOTOLYTIC ETCHING OF SILICON DIOXIDE.

3,490,056. ELECTROMECHANICAL RESONATOR FOR INTEGRATED CIRCUITS.

3,491,236. ELECTRON BEAM FABRICATION OF MICROELECTRONIC CIRCUIT PATTERNS.

3,491,272. SEMICONDUCTOR DEVICES WITH INCREASED VOLTAGE BREAKDOWN CHARACTERISTICS.

3,494,768. CONDENSED VAPOR PHASE PHOTOETCHING OF SURFACE.

3,496,427. SEMICONDUCTOR DEVICE WITH COMPOSITE ENCAPSULATION.

3,498,818. METHOD OF MAKING HIGHLY REFLECTIVE ALUMINUM FILMS.

3,504,302. FREQUENCY CONTROLLED SEMICONDUCTOR JUNCTION LASER.

3,505,571. GLASS COVERED SEMICONDUCTOR DEVICE.

3,509,446. FULL-WAVE RECTIFYING MONOLITHIC INTEGRATED CIRCUIT.

3,514,346. SEMICONDUCTIVE DEVICE HAVING ASYMMETRICALLY CONDUCTIVE JUNCTION.

3,516,346. PHOTOLYTIC ETCHING OF NICKEL-CHROMIUM ALLOY.

3,517,240. METHOD AND APPARATUS FOR FORMING A FOCUSED MONOENERGETIC ION BEAM.

3,518,111. PHOTOPOLYMERIZED FILM, COATING AND PRODUCT, AND METHOD OF FORMING.

3,520,684. PHOTOLYTIC ETCHING OF SILICON DIOXIDE BY ACIDIFIED ORGANIC FLUORIDES.

3,520,685. ETCHING SILICON DIOXIDE BY DIRECT PHOTOLYSIS.

3,520,686. INDIRECT PHOTOLYTIC ETCHING OF SILICON DIOXIDE.

3,520,687. ETCHING OF SILICON DIOXIDE BY PHOTOSENSITIVE SOLUTIONS.

3,521,339. METHOD OF MAKING CAPACITORS.

3,522,076. PHOTOPOLYMERIZED FILM, COATING AND PRODUCT, AND METHOD OF FORMING.

3,522,226. POLYMERIZED HEXACHLOROBUTADIENE.

3,523,608. FORMED PLASTIC PACKAGE WITH SNAP-IN CLOSURE.

3,524,997. MONOLITHIC INTEGRATED PHASE CONTROL CIRCUITS.

3,529,961. FORMATION OF THIN FILMS OF GOLD, NICKEL OR COPPER BY PHOTOLYTIC DEPOSITION.

3,531,735. SEMICONDUCTOR LASER HAVING GROOVES TO PREVENT RADIATION TRANSVERSE TO THE OPTICAL AXIS.

3,532,417. NONINVERTING OPTICAL REFLECTING DEVICE.

3,533,832. GLASS COVERED SEMICONDUCTOR DEVICE.

3,534,290. SEMICONDUCTOR LASER BEACON FOR ROTATING AN OUTPUT BEAM.

3,535,600. MOS VARACTOR DIODE.

3,535,775. FORMATION OF SMALL SEMICONDUCTOR STRUCTURES.

3,537,174. PROCESS FOR FORMING TUNGSTEN BARRIER ELECTRICAL CONNECTION.

3,537,889. LOW TEMPERATURE FORMATION OF OXIDE LAYERS ON SILICON ELEMENTS OF SEMICONDUCTOR DEVICES.

3,537,912. METHOD OF GROWING CHALCOGENIDE PSEUDO-BINARY CRYSTALS OF UNIFORM COMPOSITION.

3,537,925. METHOD OF FORMING A FINE LINE APERTURED FILM.

3,540,926. NITRIDE INSULATING FILMS DEPOSITED BY REACTIVE EVAPORATION.

3,540,952. PROCESS FOR FABRICATING SEMICONDUCTOR LASER DIODES.

3,541,357. INTEGRATED CIRCUIT FOR ALTERNATING CURRENT OPERATION.

3,541,676. METHOD OF FORMING FIELD-EFFECT TRANSISTORS UTILIZING DOPED INSULATORS AS ACTIVATOR SOURCE.

3,545,854. SEMICONDUCTOR MASK MAKING.

3,558,375. VARIABLE CAPACITY DIODE FABRICATION METHOD WITH SELECTIVE DIFFUSION OF JUNCTION REGION IMPURITIES.

3,558,922. FULL WAVE PHASE CONTROL INTEGRATED CIRCUIT.

3,559,002. SEMICONDUCTOR DEVICE WITH MULTIPLE SHOCK ABSORBING AND PASSIVATION LAYERS.

3,559,855. SHIMLESS SCRIBING.

3,566,457. BURIED METALLIC FILM DEVICES AND METHOD OF MAKING THE SAME.

3,566,517. SELF-REGISTERED IG-FET DEVICES AND METHOD OF MAKING THE SAME.

3,566,518. METHOD FOR FABRICATING FIELD-EFFECT TRANSISTOR DEVICES AND INTEGRATED CIRCUIT MODULES CONTAINING THE SAME BY SELECTIVE DIFFUSION OF ACTIVATOR IMPURITIES THROUGH PRESELECTED PORTIONS OF PASSIVATING-INSULATING FILMS.

3,567,508. LOW TEMPERATURE-HIGH VACUUM CONTACT FORMATION PROCESS.

3,573,108. PURIFICATION OF GERMANIUM.

3,573,516. RECTIFIER BRIDGE FOR USE WITH AN ALTERNATOR.

3,573,571. SURFACE-DIFFUSED TRANSISTOR WITH ISOLATED FIELD PLATE.

3,575,644. SEMICONDUCTOR DEVICE WITH DOUBLE POSITIVE BEVEL.

Re. 27,120. SEMICONDUCTIVE DEVICES AND METHODS OF MAKING SAME.

3,577,019. INSULATED GATE FIELD EFFECT TRANSISTOR USED AS A VOLTAGE-CONTROLLED LINEAR RESISTOR.

3,577,045. HIGH EMITTER EFFICIENCY SEMICONDUCTOR DEVICE WITH LOW BASE RESISTANCE AND BY SELECTIVE DIFFUSION OF BASE IMPURITIES.

3,577,046. MONOLITHIC COMPOUND THYRISTOR WITH A PILOT PORTION HAVING A METALLIC ELECTRODE WITH FINGER PORTIONS FORMED THEREON.

3,579,060. THYRISTOR WITH IMPROVED CURRENT AND VOLTAGE HANDLING CHARACTERISTICS.

3,579,815. PROCESS FOR WAFER FABRICATION OF HIGH BLOCKING VOLTAGE SILICON ELEMENTS.

3,586,549. METHOD OF PRODUCING DIFFUSED JUNCTIONS IN PLANAR SEMICONDUCTIVE DEVICES AND PRODUCT THEREOF.

3,586,932. FIVE LAYER GATE CONTROLLED THYRISTOR WITH NOVEL TURN ON CHARACTERISTICS.

3,591,852. NONVOLATILE FIELD EFFECT TRANSISTOR COUNTER.

3,596,370. THIN FILM CAPACITOR.

3,599,057. SEMICONDUCTOR DEVICE WITH A RESILIENT LEAD CONSTRUCTION.

3,601,667. A SEMICONDUCTOR DEVICE WITH A HEAT SINK HAVING A FOOT PORTION.

3,601,888. SEMICONDUCTOR FABRICATION TECHNIQUE AND DEVICES FORMED THEREBY UTILIZING A DOPED METAL CONDUCTOR.

3,604,990. SMOOTHLY CHANGING VOLTAGE VARIABLE CAPACITOR HAVING AN EXTENDABLE PN JUNCTION REGION.

3,606,035. SUBDIVIDED SEMICONDUCTOR WAFER SEPARATOR.

3,608,189. METHOD OF MAKING COMPLEMENTARY FIELD-EFFECT TRANSISTORS BY SINGLE STEP DIFFUSION.

3,609,471. SEMICONDUCTOR DEVICE WITH THERMALLY CONDUCTIVE DIELECTRIC BARRIER.

3,609,476. INTERDIGITATED STRUCTURES FOR GATE TURNOFF THYRISTORS AND FOR TRANSISTORS.

3,609,517. LINE VOLTAGE COMPENSATING POWER CONTROL CIRCUIT.

3,611,066. THYRISTOR WITH INTEGRATED BALLASTED GATE AUXILIARY THYRISTOR PORTION.

3,614,547. TUNGSTEN BARRIER ELECTRICAL CONNECTION.

3,614,829. METHOD OF FORMING HIGH STABILITY, SELF-REGISTERED FIELD EFFECT TRANSISTORS.

3,617,682. SEMICONDUCTOR CHIP BONDER.

3,617,828. SEMICONDUCTOR UNIJUNCTION TRANSISTOR DEVICE HAVING A CONTROLLED CROSS-SECTIONAL AREA BASE CONTACT REGION.

3,624,464. PERIPHERAL GATE SCR WITH ANNULAR BALLAST SEGMENT FOR MORE UNIFORM TURN ON.

3,627,278. VIBRATORY TREATMENT APPARATUS.

3,627,589. METHOD OF STABILIZING SEMICONDUCTOR DEVICES.

3,628,106. PASSIVATED SEMICONDUCTOR DEVICE WITH PROTECTIVE PERIPHERAL JUNCTION PORTION.

3,628,107. PASSIVATED SEMICONDUCTOR DEVICE WITH PERIPHERAL PROTECTIVE JUNCTION.

3,634,150. METHOD FOR FORMING EPITAXIAL CRYSTALS OR WAFERS IN SELECTED REGIONS OF SUBSTRATES.

3,639,975. GLASS ENCAPSULATED SEMICONDUCTOR DEVICE FABRICATION PROCESS.

3,641,405. FIELD-EFFECT TRANSISTORS WITH SUPERIOR PASSIVATING FILMS AND METHOD OF MAKING SAME.

3,642,597. SEMICONDUCTOR PASSIVATING PROCESS.

3,643,136. GLASS PASSIVATED DOUBLE BEVELED SEMICONDUCTOR DEVICE WITH PARTIALLY SPACED PREFORM.

3,644,801. SEMICONDUCTOR PASSIVATING PROCESS AND PRODUCT.

3,649,803. FAST MOUNT OVEN.

3,653,120. METHOD OF MAKING LOW RESISTANCE POLYCRYSTALLINE SILICON CONTACTS TO BURIED COLLECTOR REGIONS USING REFRACTORY METAL SILICIDES.

3,654,527. UNITARY FULL WAVE INVERTER.

3,654,529. LOOSE CONTACT PRESS PACK.

3,660,687. HYSTERESIS-FREE BIDIRECTIONAL THYRISTOR TRIGGER.

3,669,478. MACHINE AND PROCESS FOR SEMICONDUCTOR DEVICE ASSEMBLY.

3,669,731. SILICON DEVICE HAVING A LEAD-SILICATE THEREON AND METHOD OF FORMING THE SAME.

3,675,045. VOLTAGE RESPONSIVE SWITCH.

3,681,667. CONTROLLED RECTIFIER AND TRIAC WITH LATERALLY OFF-SET GATE AND AUXILIARY SEGMENTS FOR ACCELERATED TURN ON.

3,685,140. SHORT CHANNEL FIELD-EFFECT TRANSISTORS.

3,689,991. METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE UTILIZING A FLEXIBLE CARRIER.

3,697,829. SEMICONDUCTOR DEVICES WITH IMPROVED VOLTAGE BREAKDOWN CHARACTERISTICS.

3,698,080. PROCESS FOR FORMING LOW IMPEDANCE OHMIC ATTACHMENTS.

3,699,402. HYBRID CIRCUIT POWER MODULE.

3,699,406. SEMICONDUCTOR GATE-CONTROLLED PNPN SWITCH.

3,701,696. PROCESS FOR SIMULTANEOUSLY GETTERING, PASSIVATING AND LOCATING A JUNCTION WITHIN A SILICON CRYSTAL.

3,706,129. INTEGRATED SEMICONDUCTOR RECTIFIERS AND PROCESSES FOR THEIR FABRICATION.

3,706,409. SEMICONDUCTOR LEAD ATTACHMENT SYSTEM INCLUDING A SEMICONDUCTOR PELLET ORIENTATION PLATE.

3,706,915. SEMICONDUCTOR DEVICE WITH LOW IMPEDANCE BOND.

Disclaimer

3,595,828.—*Christian H. Stapfer,* Newtown, Pa. 3-PHENYL-2-PROPEN-1-ONES AND 3-PHENYL-1-PROPANONES AS BIOSTATS IN PLASTICS, PAINTS AND TEXTILES. Patent dated July 27, 1971. Disclaimer filed Oct. 16, 1972, by the assignee, *Cincinnati Milacron Chemicals Inc.*

Hereby enters this disclaimer to claim 6 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 3, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-20-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	3-16-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	12-17-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-10-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	8-21-72
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-16-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-03-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	12-22-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	1-05-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	5-26-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-01-72
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	2-03-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-10-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	3-06-72
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	1-28-72

Expiration of patents: The patents within the range of numbers indicated below expire during April 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,740,117 to 2,743,441, inclusive
Plant Patents..... Numbers 1,467 to 1,471, inclusive

PATENTS

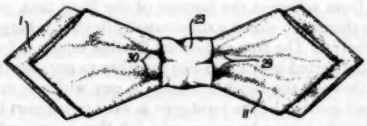
GRANTED APRIL 24, 1973

GENERAL AND MECHANICAL

3,728,736
THUMB OR FINGER GUARD
Evelyn M. Pugh, 10 St. Nicholas Terrace, New York, N.Y.
Filed April 5, 1971, Ser. No. 130,968
Int. Cl. A41d *1/00*
U.S. Cl. 2—21 **3 Claims**

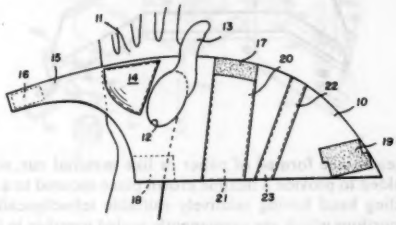
A thumb or finger guard formed of resilient rubber or plastic material molded in one piece and providing for dropped curved gripping surfaces on the front portion of the guard. By forming the front portion with thickened material and dropped curved surfaces sharp ridges are provided which will increase the grip upon the surface of the object, such as an apple, potato or carrot, when effecting cutting, tearing or grating of the same. The curvatures, either in single form according to one form of the invention or in multiple and parallel forms, provide for the ridges and for thickened material that will keep the knife or grater from penetrating to any great extent the material of the thumb guard. The guard is cut away at the location of the first knuckle to allow the guard to be more easily flexed and opposing clip formations have been provided for facilitating the insertion of the thumb or finger into the guard or the removal therefrom and at the same time providing for a good gripping action and allowing for further easy flexing of the knuckles of the thumb or finger. Such opposing clip portions are carried on the rear end of a flexible extension leaving the knuckle open except for the very front of the thumb or finger. The knuckle can be worked readily in and between the opposing clip portions.

3,728,737
SIMULATED BOW TIE AND METHOD OF MAKING SAME
Frances Burton Gillie, 4806 Suecia Drive, Richmond, Va.
Filed July 6, 1971, Ser. No. 159,845
Int. Cl. A41d *25/02*
U.S. Cl. 2—151 **7 Claims**



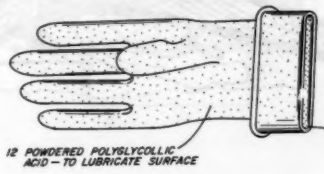
A simulated bow tie constructed from three rectangular pieces of fabric and the method of making such bow tie including the steps of folding each of two of the rectangular pieces about diagonal fold lines, forming an assembly by stitching the folded pieces together, in superposed relationship, on a line through the center point of each and normal to a longitudinal center line of each, stitching together the upper and lower meeting edges of the assembly, inverting the article, and securing a third rectangular knot band piece around the central portion of the assembly to form an item of personal wear which is versatile, permanently neat and attractive.

3,728,738
BOWLING GLOVE
Joseph P. Andolino, 112 Ravenwood Avenue, Rochester, N.Y.
Filed Oct. 1, 1971, Ser. No. 185,692
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 A **6 Claims**



An improved bowling glove stiffens and supports the hand in proper relation to the wrist and forearm. It braces the back of the hand in line with the top or back of the wrist, and braces the side of the hand opposite the thumb against rearward movement toward the radius side of the wrist and forearm. It includes a wrapper extending around the palm, back of the hand, wrist, and forearm with a hole to receive the thumb, a pad in the palm, and two stiffeners. The first stiffener extends over the back of the hand and the back of the wrist, and the second stiffener extends along the side of the hand opposite the thumb and across the radius side of the wrist and into the forearm region.

3,728,739
STERILE SURGICAL GLOVES
Bernard Albert Semp, Richmond, Va., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 770,792, Oct. 25, 1968, abandoned. This application Feb. 23, 1971, Ser. No. 117,998
Int. Cl. A41d *19/00*
U.S. Cl. 2—168 **3 Claims**

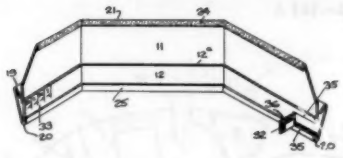


Natural or synthetic rubber surgical elements such as tubing, catheters, drains and gloves are "lubricated" so as to prevent sticking during storage, and permit easier emplacement, such as putting on the gloves by a surgeon or nurse, by applying to the surface of the rubber element finely divided polyglycolic acid powder. The polyglycolic acid powder is readily absorbed by living tissue without deleterious tissue reaction, thus minimizing tissue reaction from the transfer of the powder from the element such as a glove to internal sites in a subject.

3,728,740
ADJUSTABLE HEAD PIECE

Gilbert B. Wagenfeld, Bala Cynwyd, Pa., assignor to Cellucap Manufacturing Co., Philadelphia, Pa.

Filed Jan. 18, 1971, Ser. No. 107,150
Int. Cl. A42b 1/22
U.S. Cl. 2—197 1 Claim

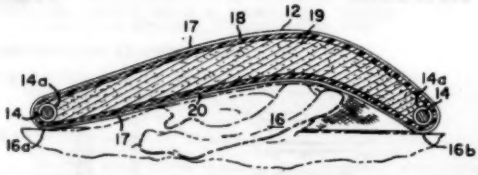


A head-piece formed of paper or like material cut, scored and folded to provide a flexible crown piece secured to a head encircling band having relatively shiftable telescopically related portions which are permanently sealed together in head-size adjusted relation by a pressure sensitive adhesive which is normally covered by a protective backing strip to preclude sealing action of the adhesive until after the head band has been adjusted to size and the strip is removed from the adhesive.

3,728,741
NOISE PROTECTIVE DEVICE

Meyer Lepor, 4745 Filipo St., San Diego, Calif.

Filed Dec. 28, 1970, Ser. No. 101,649
Int. Cl. A41d 21/00
U.S. Cl. 2—209 7 Claims

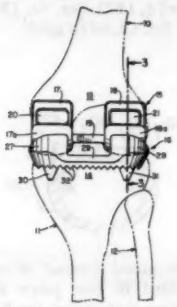


A representative embodiment of a lightweight headgear free of protuberances includes an elongate panel formed of a pair of layered, pliable sections joined together at one end and terminating in a fastener at the other end. The headgear is worn kerchief-style and the pliant sections, consisting of alternating layers of sound attenuating materials, block ambient noise. Proper selection of headgear materials and dimensioning permit the hearing of relatively low frequency speech while attenuating higher frequency noise. By being formed of a pliant material readily conforming to the contours of the head free from protuberances, the headgear is wearable at all times, especially during sleep without undue discomfort to attenuate ambient noise.

3,728,742
KNEE OR ELBOW PROSTHESIS

Robert G. Averill, Ringwood, and Alex Khowaylo, Westwood, both of N.J., assignors to Howmedica, Inc., Rutherford, N.J.

Filed June 18, 1971, Ser. No. 154,542
Int. Cl. A61f 1/24
U.S. Cl. 3—1 7 Claims

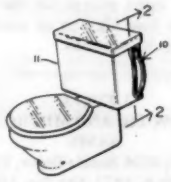


A total knee or elbow joint prosthesis having opposing condyle and plateau replacing members for attachment respectively to the upper and lower arm or leg bones, the members having respectively convex and concave spherical mating surfaces.

3,728,743
SANITARY SIPHON BIDET

Haroutun Hagopian, 1510 110th Terrace, Miami, Fla.

Filed Feb. 7, 1972, Ser. No. 223,848
Int. Cl. A47k 3/22, 11/08
U.S. Cl. 4—7 2 Claims



A sanitary siphon bidet utilizing siphon-effect for the flow of water from a flush tank having a substantially rigid pipe extending from adjacent the bottom of the flush tank over the top edge thereof to which a substantially flexible tubing is connected thereto. The free end of the flexible tubing is folded in itself and inserted into a cup-like member to prevent the flow of fluid through the flexible tubing. A peg which is mounted on the end portion of the rigid pipe is used to support the end of the flexible tubing by means of a tab that is secured to the free end of the cup-like member.

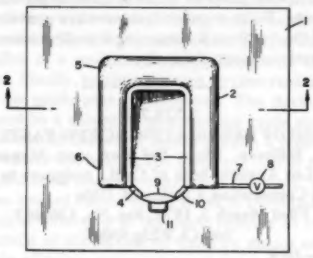
3,728,744
BEDPAN APPARATUS

Exall L. Kimbro, Jr., and Clara D. Kimbro, both of 10470 Waterfowl Terrace, Columbia, Md.

Filed Jan. 18, 1972, Ser. No. 218,751
Int. Cl. A61g 9/00
U.S. Cl. 4—113 10 Claims

An apparatus to facilitate the use of bedpans for bedfast persons which includes (a) an inflatable crescent or U-shaped cushion of rubber or other soft elastic material which, in inflated condition, is capable of elevating and supporting the

sacrococcygeal area of a patient higher above the plane of the bed than the height of a bedpan, and shaped to receive a bedpan between the legs of the crescent or U; (b) said cushion supported on a flexible pad-like base large enough to fit under the hips of the patient and having sufficient rigidity to permit

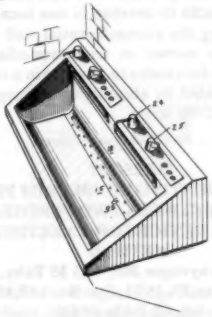


insertion under the patient with minimal manual lifting; and (c) a bedpan adapted to slide into and fit snugly between the legs of the cushion. The cushion may be adapted with a waterproof flange inside the crescent or U at a height above the bedpan rim and extending inwardly far enough to cover said rim thereby preventing drainage of fluids onto the base.

3,728,745
SCRUB SINK

Thomas Brendgord, Erie, Pa.; Klaus G. Strasser, Jamestown, and Jon W. Wehrenberg, Kennedy, both of N.Y., assignors to American Sterilizer Company, Erie, Pa.

Filed Aug. 13, 1970, Ser. No. 63,525
Int. Cl. A47k *1/04*; E03c *1/12*
U.S. Cl. 4—166 **3 Claims**



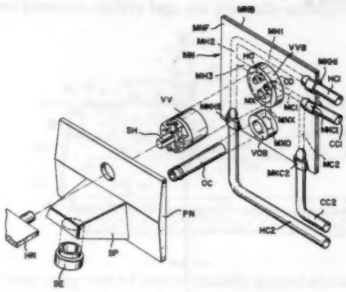
This disclosure describes a scrub sink especially suited for use in hospitals and the like. The sink has an elongated basin to accommodate use by more than one person at one time. At least two elongated nozzles are provided. The nozzles are sufficiently long in lateral expanse to spray the entire forearm of the user. The bottom of the basin is contoured to avoid splashing of the water. The nozzles are removable for easy cleaning and the entire control panel may be removed as a unit for servicing.

3,728,746
PLUMBING MANIFOLD

Thomas P. Konen, Somerville, and Robert W. Smith, Flanders, both of N.J., assignors to American Standard Inc., New York, N.Y.

Filed July 7, 1970, Ser. No. 52,872
Int. Cl. E03c *1/04*
U.S. Cl. 4—192 **13 Claims**

This invention covers a manifold for a plumbing fitting or fixture which may include a valve mechanism, such as a single lever faucet, and a spout. The manifold structure includes a plurality of conduits which are formed internally of the structure for interconnecting pipes transmitting hot and cold water with the valve mechanism and in turn with the spout. The manifold is made essentially of two metallic or plastic substantially parallel plates which may be relatively thin. One of the

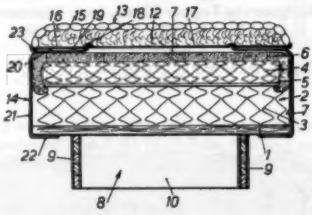


two plates will be bulged wherever conduits are to be provided. The second plate of the manifold need not have any bulges for completing the conduits. The two plates are joined together permanently so that the manifold may be connected as a unit to the valve mechanism and the spout, either at the factory or at the place where the combination is to be installed.

3,728,747
BEDS

Leslie Thomas Docker, Chadwick End, England, assignor to Slumberland Group Limited, Birmingham, England

Filed May 3, 1971, Ser. No. 139,797
Int. Cl. A47c *23/00*
U.S. Cl. 5—351 **4 Claims**



A bed comprises in combination a support, a padding unit and a decorative surround. The support comprises a spring interior with insulation on top of it. The padding unit comprises padding and can be releasably secured on top of the support so to leave a peripheral gap beeen the padding unit and the support into which gap the marginal parts of sheets and other bedclothes can be tucked. The decorative surround can be releasably secured around the support and may be permanently attached to the underside of the padding unit at the inner edge of the gap. Alternatively the padding unit may have a skirt of plain material of the same shape as such a decorative surround, there being a separate decorative surround which can be fitted over the skirt.

3,728,748

MOORING APPARATUS

Frederick G. Roehler, II, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 27, 1970, Ser. No. 93,318
Int. Cl. B63b *21/52*
U.S. Cl. 9—8 R **1 Claim**

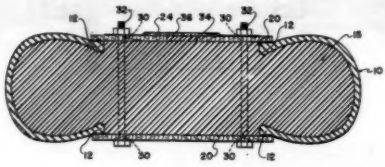
A tethering arrangement for a water-borne object which is effective to absorb forces tending to cause positional displacements thereof and subsequently utilize the energy so absorbed to return the object to its original location. In a preferred embodiment, one or more elongate members each having a predetermined elasticity factor connecting the floating object to a fixed sub-surface point or structure, the overall length of each such member varying in accordance with the stresses imposed thereon by virtue of weather conditions and/or other environmental factors to which the floating object may be subjected. In addition, the constant flexing of the elastic members greatly inhibits the growth of marine organisms on the surface thereof, as well as eliminating the cyclic stress which leads to the failure of steel components due to work-hardening.

3,728,749

TIRE FLOAT AND METHOD FOR FORMING SAME

Jack A. Eby, and Eugene F. Andersen, both of Vancouver, Wash., assignors to Topper Floats, Inc., Vancouver, Wash.

Filed Feb. 8, 1971, Ser. No. 113,494
Int. Cl. B63b *21/52, 35/00*
U.S. Cl. 9—8 R **4 Claims**



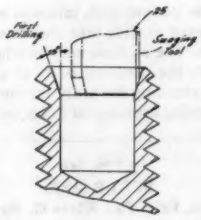
A method for converting used tire bodies into marine floats for use as moorings, buoys and the like. The tire body is provided with side panels of plywood, plastic or other material to fit over the sidewall openings on either side of the tire and thereby form an enclosed shell. Thereafter, urethane, polystyrene or other expandable plastic foam material is injected through an opening in one of the panels and expands to fill the entirety of the core cavity formed by the shell which functions as a mold. The foam material expands, forms a fused mass and secures itself to the interior of the tire and sidewall panels forming an integral shell and core, the curing of the foam being effected or accelerated by the application of heat if necessary. The injection hole may then be covered over, if desired, by fiberglass cloth to which an epoxy resin catalyst is applied to form a seal. Finally, the exterior of the shell is coated with epoxy paint or other sealant to provide a waterproof covering. Bolts or other fasteners are provided through the sides of the tire float for securing it to structures which are to be buoyantly supported thereby.

3,728,750

METHOD OF FABRICATING SCREW FASTENERS

Donald W. Stillman, Playa Del Rey, and Mansour A. H. Bagheri, Los Angeles, both of Calif., assignors to Long-Lok Fasteners Corporation, Cincinnati, Ohio

Filed March 3, 1971, Ser. No. 120,462
Int. Cl. B23g *9/00*
U.S. Cl. 10—10 R **10 Claims**



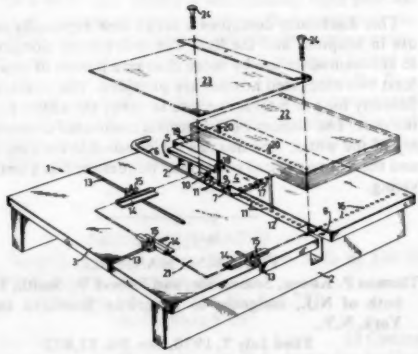
To fabricate a hollow-end screw having a thin circumferential wall with radial protuberances for self-locking action, the tendency for cracks to develop in one location is avoided in part by thickening the circumferential wall and in part by eliminating a sharp corner at an intermediate fabrication stage. The tendency for cracks to develop in a second location on the screw is avoided by eliminating a sharp corner in the final configuration of the screw.

3,728,751

METHOD FOR MOUNTING BUNDLES OF PERFORATED PAPER SHEETS BETWEEN TWO PERFORATED FILE COVERS, AND A DEVICE FOR CARRYING OUT THE METHOD

Per Sigurd Nes, Akerbyvagen 308, 183 35 Taby, Sweden

Filed May 27, 1971, Ser. No. 147,406
Int. Cl. B42c *19/00*
U.S. Cl. 11—1 R **7 Claims**



The present invention relates to a method for mounting bundles of perforated paper sheets between two perforated

file covers, and a device for carrying out said method. The method is characterized by first fixing one cover panel of the file in position between guide means and then fixing the bundle of papers by at least two guide pins in positions such that one side, having at least two free holes, overlaps the perforated back portion of the file cover panel with said free holes coinciding with corresponding holes in the file cover panel. The other file cover panel is then placed on top of the sheet bundles in a position corresponding with the first file cover panel. Finally, retaining means are inserted into the free holes and the guide pins are removed. The device is chiefly characterized by a mounting plate having guide structures for fixing a perforated file cover panel in such a position that at least each outermost hole in the spine portion of the cover is located opposite its respective recess in the plate, at least one row of holes spaced raltive to the holes in the bundle of paper sheets being so arranged in the plate relative to the recesses that the bundle of sheets can be fixed by means of two guide pins capable of being passed through the holes in the sheets and holes in the plate so that at least two free holes in one side of the bundle of paper sheets coincides with the holes of the fil cover panel located opposite the recesses.

3,728,752

BEARINGS FOR BRIDGES AND SIMILAR STRUCTURES

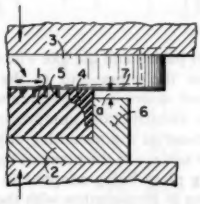
Wolfhart Andra, Stuttgart; Erwin Beyer, Dusseldorf; Fritz Leonhardt, Stuttgart; Heribert Thul, Bonn-Bad Godesberg, and Louis Wintergerst, Esslingen Am Necarb, all of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Oberhausen-Stekrade, Germany

Filed Feb. 22, 1971, Ser. No. 117,661

Claims priority, application Germany, Feb. 20, 1970, P 20 07 767.2

Int. Cl. E01d *19/06*

U.S. Cl. 14—16 **20 Claims**



A slidable-tiltable bearing arrangement is comprised of a deformable resilient load transmitting bearing pad positioned within a casing which encloses the bottom and a part of the lateral surface of the pad. The upper bearing surface of the pad extends upwardly above the edge of the casing and a seal, preferably formed as a reinforced ring-shaped body of polytetrafluoroethylene, extends about and confines the upper edge of the pad against deformation. Further, the upper surface of the pad acts as a slide surface and depression or recesses are formed in it to hold a lubricant which aids in the sliding action. The casing may be formed with a separate side wall and base or the side wall and base may be formed as an integral member.

3,728,753

DOCKBOARD

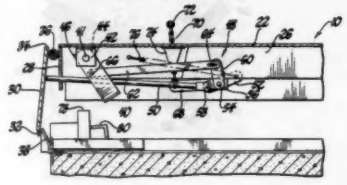
Robert C. Beckwith, Scotts Bluff, Nebr., and Robert W. Hecker, Jr., Clare, Mich., assignors to Rite-Hite Corporation, Milwaukee, Wis.

Filed March 3, 1971, Ser. No. 120,520

Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **10 Claims**

A dockboard assembly including a support structure with a ramp having a first end pivotally connected to the support structure for pivotal movement between raised and lowered positions on opposite sides of the dock level position. A lip is pivotally connected at a rear edge to the front of the ramp for pivotal movement between an extended cantilevered position and a pendent position. The support structure includes lip supporting keepers for receiving the front edge of the lip when the lip is in the pendent position for supporting the ramp in the dock level position. Safety legs are pivotally connected to the



ramp for engaging one of two vertically spaced abutment surfaces for limiting downward pivotal movement of the ramp. The improvement resides in actuation means for pivoting the lip upwardly from the pendent position as the ramp is pivoted upwardly slightly to allow the front edge of the lip to move downwardly past the lip support keepers and for pivoting the safety legs to a retracted position whereby they will not engage the abutment surfaces so that the ramp may be pivoted to a lowered position.

3,728,754

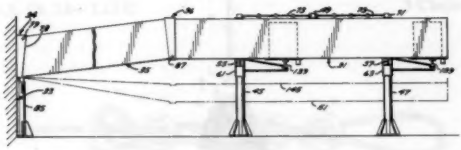
VERTICALLY ADJUSTABLE LOADING RAMP APPARATUS

Carl L. Lodjic, Long Beach, Calif., assignor to Global Erectors, Inc., Long Beach, Calif.

Filed July 16, 1971, Ser. No. 163,342

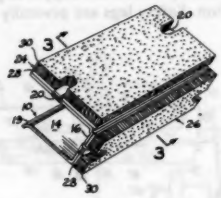
Int. Cl. B65g *11/00*

U.S. Cl. 14—71 **9 Claims**



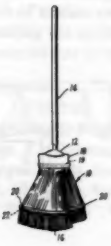
A vertically adjustable loading ramp apparatus for use with first and second aircraft having respective first and second sets of entryway sills disposed at respective first and second heights, at least one of such sets including a pair of entryway sills spaced apart a selected distance. A horizontal main ramp extends longitudinally of an aircraft loading area and is adjustable from a first horizontal position disposed at substantially the first height to a second horizontal position disposed at substantially the second height. The main ramp is connected with the terminal structure by means of an approach ramp which is adjustable to enable the main ramp to be shifted between the first and second positions. A pair of mating ramps are disposed longitudinally along the main ramp for mating with the respective first and second sets of entryway sills and extend transversely from such main ramp to terminate in doorways for mating with the respective first and second entryways of the one set. Drive means is provided for shifting the main ramp vertically between the first and second positions whereby the main ramp will be maintained horizontal while in both the first and second positions to thereby enable the mating ramps to align with the respective aircraft entryways.

3,728,755
PAINT APPLICATOR
Joseph J. Whalen, 1220 S. W. 24, Oklahoma City, Okla.
Filed June 4, 1971, Ser. No. 150,112
Int. Cl. A46b *15/00*; B44d *3/28*
U.S. Cl. 15—210 R **3 Claims**



An elongated generally U-shaped channel forms a base member having normally disposed planar surfaces. Rectangular sections of pile fabric overlie two of the outer surfaces of the base member and transfer liquid coating material to a surface to be covered. Means on the base member removably secure the pile fabric ends thereto.

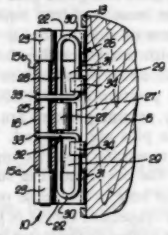
3,728,756
MOP HEAD
John G. Argeris, 8 Leander Street, Danielson, Conn., and James A. Atwood, III, Genbren Road, Plainfield, Conn.
Continuation-in-part of Ser. No. 73,115, Sept. 17, 1970, Pat. No. 3,633,975. This application Sept. 14, 1971, Ser. No. 180,279
Int. Cl. A47l *13/20*
U.S. Cl. 15—229 A **8 Claims**



A mop head has generally U-shaped loops extending to both sides of the center band and the loops are extensively twisted along their lengths. Additional bands may be provided on both sides of the center band. The center band is secured to portions of the loops that are untwisted.

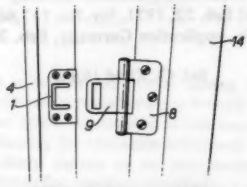
3,728,757
SELF-LATCHING HINGE
Gerald A. Lloyd, Monterey Park, Calif., assignor to Jaybee Manufacturing Corporation, Los Angeles, Calif.
Filed June 23, 1971, Ser. No. 155,943
Int. Cl. E05d *11/08*
U.S. Cl. 16—142 **9 Claims**

A self-latching cabinet hinge includes a tubular pressure roller supported by a spring member attached to the first of two pivotally connected hinge members. The pressure roller cooperates with the edge of a hinge knuckle of the second hinge member to perform the latching function. The spring member comprises a unitary, resilient wire having a central pressure roller supporting section the ends of which are bent back to define return sections which are gripped by ears on the first hinge member. The free ends of the return sections



are bent at right angles to form retaining sections which cross the roller supporting section and loop around the hinge pin.

3,728,758
HINGE
Jan Johansen, Oslo, Norway, assignor to A/S Grorud Jernvarefabrik, Oslo, Norway
Filed Dec. 11, 1970, Ser. No. 97,106
Claims priority, application Norway, Dec. 16, 1969, 4962/69
Int. Cl. E05d *7/12*
U.S. Cl. 16—149 **5 Claims**

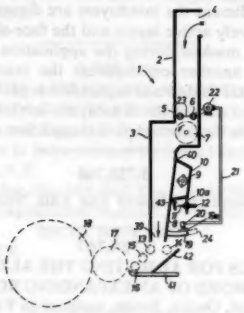


A hinge for door panels and the like which are adapted to be stacked one upon the other and at the same time avoid damage to adjacent doors by hinge members carried by the doors, the hinge construction comprising a locking plate mounted in a cut-out at the mounting edge of the door and having a flat outer surface in the plane of the flat surface of the door, said locking plate being adapted to be secured to the door and providing in cooperation with the cout-out an elongated opening for receiving an engagement structure, and a hinge plate member having means along one edge for receiving a hinge pin, including an engagement structure to be received in the elongated opening under the locking plate and a resilient locking member extending inwardly from the front edge portion of the locking plate and having an outer surface in the plane of the outer surface of the locking plate, and locking means on the underside of the inner portion of the resilient locking member adapted to be engaged by the engagement structure of the hinge plate member when inserted into the elongated opening.

3,728,759
APPARATUS FOR REGULATING THE SUPPLY OF FIBROUS MATERIAL FED TO PROCESSING MACHINES
Herbert Hergeth, Dulmen, Germany, assignor to Hergeth Maschinenfabrik und Apparatebau, Dulmen (Westphalia) Germany
Filed Jan. 20, 1971, Ser. No. 107,891
Claims priority, application Germany, Jan. 31, 1970, P 20 04 394.1
Int. Cl. D01g *15/40*
U.S. Cl. 19—105 **6 Claims**

A process and apparatus for regulating the supply of fibrous material fed to processing machines includes means for deter-

mining the density of the fibrous material as it passes through a hopper and for adjusting the rate of feed of the fibrous material into the hopper in response to the density determination whereby the fibrous material may be maintained at a predetermined density. The density determination may be



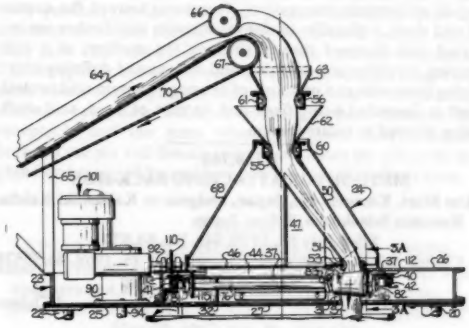
made either by a movable wall of the hopper which moves in response to variations in the amount of fibrous material contained in the hopper or by directing an air stream through fibrous material in the hopper and measuring the air pressure change caused by variations in the density of the fibrous material.

3,728,760

APPARATUS FOR COILING STRAND MATERIAL SUCH AS TEXTILE SILVER

Herman S. Johns, Patterson, N.C., assignor to Wellman Industries, Inc., Johnsonville, S.C.

Filed Oct. 19, 1970, Ser. No. 81,738
Int. Cl. B65h *54/76*
U.S. Cl. 19—159 R **3 Claims**



Strand material is coiled into a container through a rotating coil forming member by means of a pair of calender rolls, at least one of which comprises a tubular shell spaced from and surrounding its rotational axis, with resilient means; preferably elastomeric material, positioned between the shell and its axis to permit lateral displacement of the shell relative to its axis by strand material passing between the calender rolls.

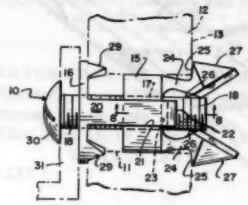
Also disclosed is apparatus for coiling strand material of substantial bulk or width, in which a pair of frustoconically-shaped calender rolls are arranged to advance strand material through a coil forming member eccentrically thereof, such that the outer edge of the strand material is advanced at a faster rate than the inner edge of the strand material to compensate for the difference in the diameters of the outer and inner edges of the coils of strand material being deposited in the container.

3,728,761

FASTENER

James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.

Filed June 22, 1971, Ser. No. 155,476
Int. Cl. A44b *21/00*; F16b *13/04, 39/24*
U.S. Cl. 24—73 **6 Claims**



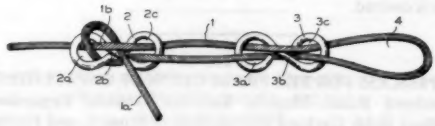
A fastener attachable to an article in an opening therein in which the fastener has two parts, an inner part and an outer part, with interengaging means permitting longitudinal adjustment of the over-all length of the fastener, grasping elements on each of these parts engaging the opposite side surfaces of the article when the fastener is in position in an opening in the article and a securing bolt extending from one surface of the article into the fastener and engaging the inner part as a nut with the bolt on rotation expanding the grasping elements of the inner part to engage the inner surface and drawing the parts toward each other to press the respective grasping elements of both parts into secure engagement with their respective surface areas on the article, the bolt being easily removable from the fastener so that the inner and outer parts may be removed as desired from their positions in the article opening.

3,728,762

HOLDER ASSEMBLY FOR CABLES AND METHOD

James W. Hogg, 6216 Hillsboro Road, Nashville, Tenn.

Filed Dec. 1, 1970, Ser. No. 94,056
Int. Cl. F16g *11/14*
U.S. Cl. 24—129 C **3 Claims**



A knot assembly for cables is obtained by introducing a flexible cable through holes defined by two relatively rigid shaped metal rods and bending it around the rods and the cable itself; a loop made with this cable is held together by this knot assembly.

3,728,763

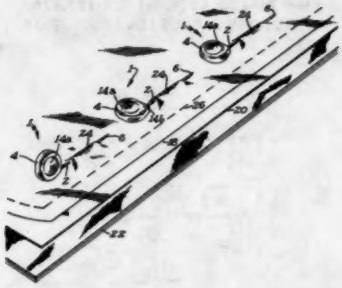
SEAMSTRESS PIN

James J. Warzecha, 405 4th Ave., N.E., St. Cloud, Minn.

Filed May 3, 1971, Ser. No. 139,343
Int. Cl. A44b *9/02*
U.S. Cl. 24—150 DP **5 Claims**

An improved seamstress pin adapted for controlled and easy insertion in fabric by the attachment of an elongated, pointed shank at its base end to an enlarged, disc-shaped pin head at a vertical location between the center of the head and a curvilinear, fabric engaging base wall of the head. The shank is horizontally centered in the pin head at a distance above the fabric engaging base wall of the head which is equal to one-

half the thickness of the head measured between its side walls so that the head may be pivoted to a horizontal position with



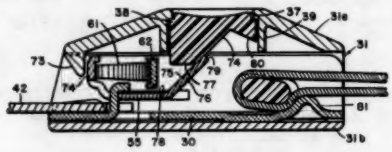
one of its side walls lying against the fabric without changing the elevation of the pin shank above the work surface on which the fabric is resting.

3,728,764

DUAL ACTUATION SAFETY BELT BUCKLE MECHANISM

Andrew G. Carter, Grand Rapids, Mich., assignor to Carter Engineering Company, Grand Rapids, Mich.

Filed July 22, 1971, Ser. No. 165,160
Int. Cl. A44b *19/00*; A47c *31/00*
U.S. Cl. 24—230 A **12 Claims**



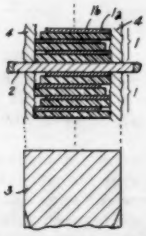
A mechanical conversion system provides push-button actuation of a slide-action locking mechanism, while preserving the possibility of actuation by sliding handle movement where this is desired.

3,728,765

PROCESS FOR THE PRODUCTION OF CAPACITORS

Reinhard Behn, Munich; Heinrich Gottlob, Regensburg; Hans Haid; Gerhard Hoyler, both of Munich, and Hartmut Kessler, Regensburg, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Division of Ser. No. 834,405, June 18, 1969, Pat. No. 3,670,378. This application Nov. 24, 1971, Ser. No. 201,867
Int. Cl. H01g *13/00*
U.S. Cl. 29—25.42 **2 Claims**



Capacitors are manufactured by winding a number of parent or master windings one upon another, coating the windings in common with metal on the face sides thereof by a metal spraying process and separating them one from the other. In one instance, the master windings are separated one from the other by the provision of inactive layers which project at the face sides or ends of the windings to prevent contacting of the layers of the windings during metal spraying. In another embodiment the interlayers are dimensioned as wide as the capacitively active layers and the face-side zones of the interlayers are masked during the application of the metallic layers. In yet another embodiment the inactive layers are completely metal coated and separation is provided by sawing or cutting in the zone of the interlayers. In this case, the interlayers remain on the finished partial capacitor as cover layers.

3,728,766

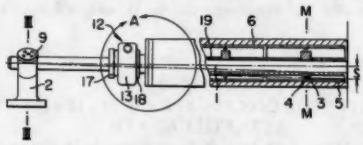
Patent Not Issued For This Number

3,728,767

APPARATUS FOR ADJUSTING THE ALTITUDE OF A CHORD OF AN EXPANDING ROLL

Masayuki Shirai, Osaka, Japan, assignor to Yamauchi Rubber Industry Co., Ltd., Osaka, Japan

Filed Dec. 28, 1970, Ser. No. 101,815
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **7 Claims**



An apparatus for adjusting the altitude of the chord of a roll for expanding a strip of synthetic resin film, cloth, and metal foil, etc. comprising; a central shaft bent in an arc-shape and journaled by bearings, a plurality of eccentric bushes rotatably inserted on said shaft and axially spaced therealong and having an eccentricity successively increasing toward the center of said shaft, a plurality of sleeves wherein said bushes are inserted and disposed therein through the medium of a ball bearing, a rubber roll covering said sleeves and defining combining therewith as a unit, one of bearings wherein said central shaft is journaled being fixed and, in case of need, said shaft being allowed to rotate therein.

3,728,768

METHOD FOR ATTACHING BACK-HOE

Ikuo Mori, Komatsu-shi, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed July 15, 1970, Ser. No. 54,970
Claims priority, application Japan, July 15, 1969, 44/55578
Int. Cl. B21h *7/00*; B21k *19/00*
U.S. Cl. 29—148.3 **3 Claims**

The present disclosure relates to the method for attaching back-hoe which comprises disconnectably suspending the

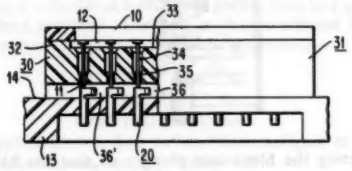
slide-bed provided on the swing bracket of the back-hoe on the mount-adopter provided on a tractor-shovel or bulldozer in such a manner that said slide-bed can be slid in the lateral direction to the effect that digging operation on the side of the body can be smoothly carried out even if said slide-bed be made smaller than the width of the body, and the connection or disconnection of back-hoe can be simply and smoothly carried out at any time.

3,728,769

APPARATUS FOR ASSEMBLING A MODULE ELEMENT TO A SUBSTRATE ELEMENT

Robert L. Judge, and Eugene S. Pearson, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 101,662, Dec. 28, 1970, Pat. No. 3,676,832. This application March 9, 1972, Ser. No. 233,376
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **11 Claims**



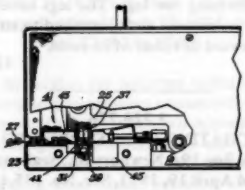
Apparatus for shifting one of or creating relative lateral movement between the pin and a novel female connector as described and claimed in U. S. Pat. No. 3,676,832, when the connectors are mounted respectively in a module element and a substrate element. This is a division of application Ser. No. 101,662 filed Dec. 28, 1970, now U. S. Pat. No. 3,676,832 issued on July 11, 1972. The female connectors are inserted into a printed circuit board or module, the connectors each comprising an axially extending conductive tubular body portion having a loop-type receptacle at one terminal end of the body portion, the loop having a greater dimension than the diameter of a male connector-type pin so as to permit essentially zero axial force insertion of the pin into the receptacle. The receptacle includes a pair of resilient, radially projecting arms which converge from the receptacle and in conjunction with the receptacle define a converging path between the receptacle and the arms whereby relative lateral motion between the pin and female connector causes the pin to be engaged and retained by and between the pair of resilient arms.

3,728,770

APPARATUS FOR ENSURED SPLICING OF WIRES

Albert L. Pence, and Van Zandt Smith, both of Austin, Tex., assignors to A.P.C. Industries, Inc., Mineral Wells, Tex.

Division of Ser. No. 93,107, Nov. 27, 1970. This application May 18, 1972, Ser. No. 254,430
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **22 Claims**



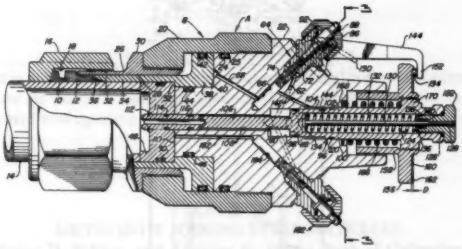
Apparatus for splicing conductors characterized by inserting the conductors to be spliced within a crimpable connector means, passing penetrating radiation through the connector means and conductors, monitoring a quantum level of a function that is responsive to the attenuation of the penetrating radiation and crimping the connector means to join the conductors only if the penetrating radiation is attenuated an amount sufficient to indicate proper insertion of the conductors, indicated by the quantum level of the function being in a predetermined scalar direction from a predetermined level. Also disclosed are specific types of penetrating radiation; for example, energy and nuclear particles; and specific structures.

3,728,771

APPARATUS FOR SWAGING AND TESTING FERRULES

Leonard P. Spontelli, Seven Hills, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed April 15, 1971, Ser. No. 134,229
Int. Cl. B21d *41/00*
U.S. Cl. 29—237 **38 Claims**



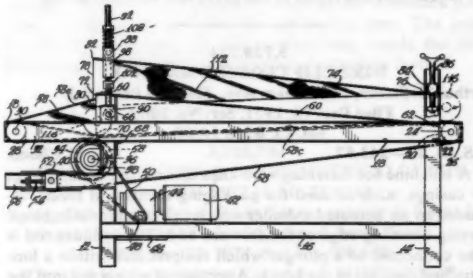
Apparatus for swaging one or more ferrules on the periphery a cylindrical member such as a tube and for testing the integrity of the grip by the ferrules on the tube following a swaging operation. The apparatus shown in the drawings includes power actuated camming means for engaging the ferrules and forcing them radially inwardly into engagement with the tube while means cooperate therewith to prevent longitudinal movement of the ferrules. Additionally, testing means are provided for testing the integrity of the swaging operation including means for applying a predetermined longitudinally directed force against an end of the tube while the ferrules are held to determine whether or not the tube will move relative to the ferrules.

3,728,772

TAPE BREAKER (CASE 1)

Robert B. Coffman, 1405 Spring Beach, Cary, Ill.

Filed Oct. 26, 1971, Ser. No. 192,034
Int. Cl. B23p *19/04*
U.S. Cl. 29—239 **4 Claims**



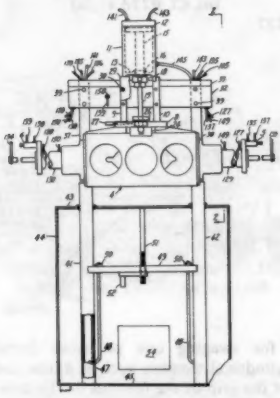
A breaker for separating individual spools of slit and rewound gummed paper.

A roll of spools is passed between a moving surface and a complementary fixed surface. The surfaces are flat at the entrance and gradually curve an increasing amount to the point of discharge. Since the roll of spools can not conform to the curved surfaces they tend to separate from each other.

3,728,773
CLIPPING APPARATUS

Arnold E. Dobbert, Fremont, Calif., assignor to Rheem Manufacturing Company, New York, N.Y.

Filed March 24, 1971, Ser. No. 127,495
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.57 **3 Claims**



Clipping apparatus for tying stuffed casings. A gathering and constricting device is arranged to receive the elongated stuffed casing therethrough and, in timed relation with the stuffer, said device constricts the filled casing at space points along the length of the latter and a clipping cylinder associated with said gathering device applies a U-shaped clip around the casing at the constricted point. Two axially spaced apart clips may be applied at one time as disclosed herein.

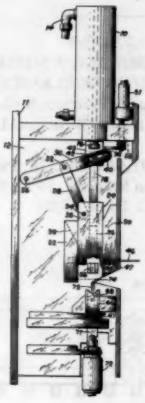
The clipping cylinder is proiided with a crimp control that permits adjustment of the length of travel of the clipping punch and therefore the degree of pressure applied to the deformed clip. The apparatus is mounted so as to be vertically adjustable in order to suit the height of the stuffed casing being extruded from th stuffer. A novel arrangement of fluid lines supplying power to the various parts of the apparatus is provided so as to minimize the number of lines exposed to danger and fouling. Such arrangement includes a manifold which permits fast connection and disconnection of any line for adjustment and repair of the particular device it serves.

3,728,774
WIRE CLIP CLOSURE MACHINE

Arthur H. Steller, 16 Florham Ave., Florham Park, N.J.

Filed Dec. 10, 1971, Ser. No. 206,673
Int. Cl. B23p *11/00*
U.S. Cl. 29—243.57 **11 Claims**

A machine for fastening wire clips around the ends of bags or casings, such as used for packaging meats and foods, includes an air actuated cylinder which drives a movable block having a cutting edge at the forward end. The cylinder rod is also connected to a plunger which reciprocates within a longitudinal channel in the block. A section of wire is fed into the path of the block which moves forward to cut off a desired length and form the wire over an inverted U-shaped die. The like shaped wire is forced into the channel while another internal surface of the block moves the die back out of the path. The plunger also moves along the channel to force the ends of the wire into curved grooves in a closure die which wraps the ends of the wire together to form an overlapping loop around the end of a bag to enclose the package. All of the operations are performed in one continuous stroke of the main air cylinder with the sequence controlled by different linkages

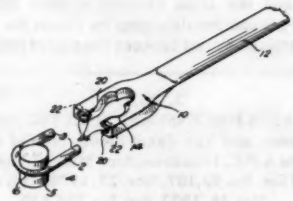


connecting the block and plunger so that the block has a shorter slower stroke than the plunger. Two additional air cylinders are operated following the closure of the bag. One actuates a knife to cut the trailing end of the enclosed bag and the other feeds the proper length of wire under the block upon the return stroke of the main cylinder and before the start of the next sequence of operation.

3,728,775
TOOL FOR LOCK RINGS

William A. Hosbach, 715 Newport Dr., Baldwin Township, Allegheny County, Pa.

Filed March 31, 1971, Ser. No. 129,907
Int. Cl. B23p *19/08*
U.S. Cl. 29—243.57 **5 Claims**



A tool for holding horseshoe shaped lock rings to facilitate their installation or removal. The tool has a handle with a bifurcated end forming two legs. The legs have facing slots or grooves at their outermost ends arranged to straddle the lock ring at a point inward of either of its ends.

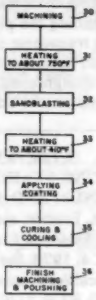
3,728,776
EPOXY COATING OF REFURBISHED BALLS

Louis D. Defazio, Box 19A Newbury St., Seabrook Beach, N.H.

Filed April 19, 1971, Ser. No. 135,198
Int. Cl. B23p *7/00*
U.S. Cl. 29—401 **7 Claims**

A process is provided for epoxy coating seawater valve balls and other valve balls in marine use to provide a surface finish

greatly exceeding in durability the normal finish of the balls. Valve balls requiring refinishing are machined to a selected smaller diameter than that required and then coated in several



applications in a fluidized bath under proper heat to a greater diameter than required. The ball is then machined to the desired diameter and hand-finished where necessary.

3,728,777

CASTING PROCESS

Gordon Appling Crowe, Ann Arbor, Mich., assignor to North American Urethanes, Inc., Upsilanti, Mich.

Filed March 1, 1971, Ser. No. 119,522

Int. Cl. B23p *17/00*

U.S. Cl. 29—421 **4 Claims**

A process and apparatus for flattening a metal sheet and casting a coating comprising supporting a sheet on a support having a substantially air impervious bottom and a substantially air impervious wall which enclose a region having an open top and containing an air pervious supporting means, and removing air from the region of the air pervious supporting means until the air pressure above the sheet exceeds the air pressure within the region and forces the sheet against the pervious support substantially free from undulations and then casting a coating over at least part of the sheet while it is substantially free from undulations and maintaining the sheet free from undulations until the coating is a solid.

3,728,778

METHOD OF INFLATING METAL STRIP OR PANELS HAVING INFLATABLE FLUID PASSAGEWAYS

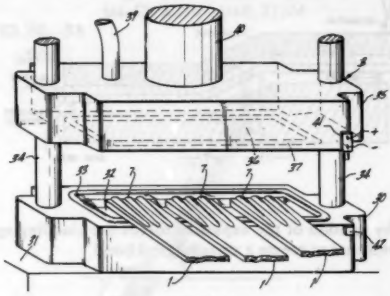
Verne L. Middleton, East Alton, Ill., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 875,636, Nov. 12, 1969, Pat. No. 3,603,128. This application March 22, 1971, Ser. No. 127,048

Int. Cl. B23p *17/00*

U.S. Cl. 29—421 **4 Claims**

An inflation apparatus for inflating metal strips or panels containing inflatable passageways connected to a preformed opening. The apparatus comprises two opposing plates which have resilient sealing means mounted on each of the opposing faces of the plates. At least one of the plates has a pressure cavity for supplying fluid under pressure to the preformed opening of the metal strip or panel for inflating the passageways therein. The apparatus also includes means for clamping plates about the preformed opening so that the resilient sealing means sealingly engage the metal strip or panel. This engagement results in crimping the preformed opening but does not close it completely. In operation, the plates are clamped about opposing surfaces of the panel or



strip at the preformed opening and a suitable fluid under pressure is forced into the pressure cavity and through the preformed opening so as to inflate the passageways.

3,728,779

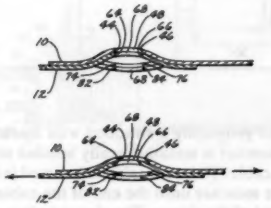
METHOD OF JOINING STRIP MATERIAL

Walter D. Behlen, and Anthony G. Hilger, both of Columbus, Nebr., assignors to Behlen Manufacturing Company, Inc., Columbus, Nebr.

Continuation of Ser. No. 665,875, Sept. 6, 1967, abandoned. This application Nov. 23, 1970, Ser. No. 92,197

Int. Cl. B23p *11/00*

U.S. Cl. 29—432 **3 Claims**



The method of bonding a pair of strips of material together, comprising, simultaneously deforming a portion of material out of each of the sheets and then longitudinally moving the sheets with respect to each other whereby the deformed portions will interlock to bond the sheets together. The joint formed by deforming the sheets effectively bonds the two sheets together thereby preventing any separation thereof.

3,728,780

EXPLOSIVE CLADDING ON GEOMETRICALLY NON-UNIFORM METAL MATERIAL

Kyung Taik Chang, Seoul, South Korea, assignor to Korea Institute of Science and Technology, Seoul, South Korea

Filed Jan. 22, 1971, Ser. No. 108,698

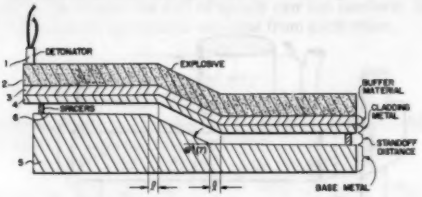
Claims priority, application Korea, Jan. 24, 1970, 122/70

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 **10 Claims**

A method for explosively cladding one metal having a non-linear surface on another metal having a similar non-linear

surface. A metal base member is spaced from a metal cladding plate an an explosive is positioned over the cladding plate



whereby ignition of the explosive forces the cladding against the metal base to create a metallurgical bond.

3,728,781

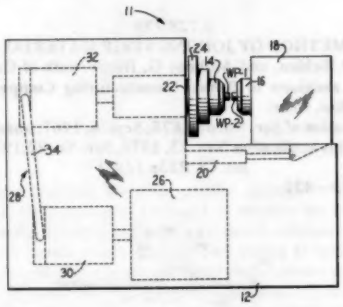
METHOD OF PRODUCING A STRANDED WIRE ASSEMBLY BY FRICTION WELDING

Ronald E. Curtis, Chillicothe, Ill.; Gary L. English, Scotia, N.Y., and James R. Hense, Peoria, Ill., assignors to Production Technology Inc., Peoria, Ill.

Filed April 26, 1971, Ser. No. 137,258

Int. Cl. B23k *27/00*

U.S. Cl. 29—470.3 **2 Claims**



A method for producing a stranded wire assembly whereby a connector member is metallurgically bonded to the end of a stranded wire cable. The wire cable is inserted into one end of a hollow sleeve member until the end of the cable is flush with the opposite end of the sleeve. The sleeve is then mechanically fastened to the cable and the coplanar surface of cable and sleeve is friction welded to the connector.

3,728,782

PROCESS FOR THE PRODUCTION OF STRAIGHT-BEAD WELDED PIPE

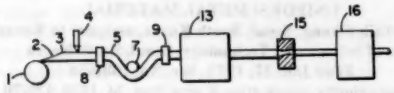
Gerhard Ziemek, Hanover, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte, Hanover, Germany

Filed Oct. 4, 1971, Ser. No. 186,173

Claims priority, application Germany, Oct. 8, 1970, P 20 49 420.6

Int. Cl. B23k *31/02*

U.S. Cl. 29—477 **7 Claims**



Straight-bead welded pipe with an entirely homogeneous gain structure is produced by plastic deformation of the welded pipe, specifically in the area of the weld seam, to substantially destroy the weld-induced variations in grain structure and provide nuclei for new, equiaxed grains. A grain texture is avoided by effecting deformation in two directions with two distinct stresses: bending the pipe away from and back to its axis deforms it in the transverse plane, and compressing the pipe along the weld bead deforms it in the longitudinal plane: Thereafter, the pipe is straightened, annealed and, if desired, reduced to finished diameter and wall thickness.

3,728,783

PROCESS FOR BRAZING STAINLESS STEEL PARTS TO PARTS OF ALUMINUM AND ALUMINUM ALLOYS

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed Dec. 4, 1970, Ser. No. 95,402

Claims priority, application France, Dec. 15, 1969, 6943387

Int. Cl. B23k *31/02, 35/36*

U.S. Cl. 29—495 **4 Claims**

Process for brazing stainless steel parts to parts of aluminum and aluminum alloys in which the steel parts are pickled in an aqueous bath, then dipped in a flux bath containing a salt of zinc and dried in a stove, the steel parts thus coated are then brazed to said parts of aluminum by usual technics.

3,728,784

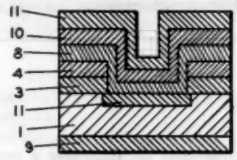
FABRICATION OF SEMICONDUCTOR DEVICES

John G. Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed April 15, 1971, Ser. No. 134,240

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **6 Claims**



The disclosure herein pertains to methods for fabricating planar, discrete or monolithic arrays of semiconductor devices, particularly light-emitting diodes and arrays thereof. The disclosure more particularly concerns diffusion processes to form controlled regions of P-type conductivity in N-type conductivity semiconductors.

3,728,785

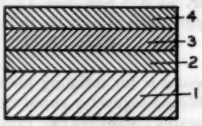
FABRICATION OF SEMICONDUCTOR DEVICES

John G. Schmidt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed April 15, 1971, Ser. No. 134,251

Int. Cl. B01j *17/00*

U.S. Cl. 29—588 **6 Claims**



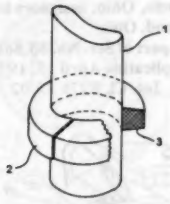
The disclosure herein pertains to methods for fabricating discrete semiconductor devices, particularly light-emitting diodes. The disclosure more particularly concerns a diffusion process to form controlled regions of P-type conductivity in N-type conductivity semiconductors.

3,728,786

METHOD OF MANUFACTURE OF A PERMANENT-MAGNETIZED ROTOR FOR A SYNCHRONOUS MOTOR

Pierre Lucas, Dourg-Les-Valence, and Pierre Paillet, Pierre-Curie-Valence, both of France, assignors to Crouzet, Paris, France

Filed Nov. 15, 1971, Ser. No. 198,892
Claims priority, application France, Nov. 16, 1970, 7041294
Int. Cl. H02k 15/02, 15/10
U.S. Cl. 29—598 1 Claim



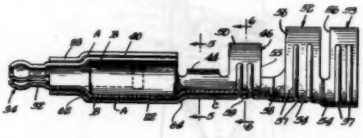
A method of manufacture of a permanent-magnetized rotor for a small multipolar synchronous motor from a rectangular tape made of a flexible plastomagnetic material comprising an organic binder loaded with magnetic powder, wherein said flexible tape has a rectangular or square cross-section and is cut to suitable dimensions and then shaped as a ring with a trapezoidal cross-section through contiguous winding on a cylindrical mandrel with a suitable diameter and is subjected to a curing operation designed to impart to it a predetermined stiffness while maintaining in it a slight expansibility, due to the controlled curing of the binder and then after the concentric introduction of the ring and of an axis in a mold with a cylindrical wall, the axis and the ring are made integral through injection of a thermoplastic or thermosetting material or of a metal having a low melting point whose pressure tends to apply the ring onto said cylindrical wall of the mold the internal diameter of which corresponds precisely to the external diameter of the finished rotor.

3,728,787

METHOD OF MAKING A SHIELDED CABLE CONNECTOR

Cletus G. McDonough, Elmhurst, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Division of Ser. No. 61,185, Aug. 5, 1970, Pat. No. 3,660,805.
This application Oct. 13, 1971, Ser. No. 188,740
Int. Cl. H02g 15/00
U.S. Cl. 29—629 6 Claims



Complementary male and female connectors are provided for shielded cables such as audio cables. Each connector comprises inner and outer sheet metal conductors with a sheet of insulation laminated to the outer conductor and located between the two conductors to insulate the two conductors. Each connector has portions for crimping respectively the center conductor and shield of a shielded cable. A method of making the connector is provided whereby a sheet of metal, a part of which has the insulating sheet laminated thereto, may be blanked and folded to bring together an outer laminated conductor part and an inner non-laminated conductor part so that the insulation is sandwiched between the two conductor parts, following which the inner and outer parts are shaped into a configuration which includes a tubular body having a longitudinal seam.

3,728,788

STRAIGHT RAZOR ADAPTED FOR USE WITH INJECTOR BLADES

Robert E. Pearson, 414 Kessler Boulevard, Seymour, Ind.

Filed Aug. 26, 1971, Ser. No. 175,255
Int. Cl. B26b 21/10, 21/24
U.S. Cl. 30—53 3 Claims

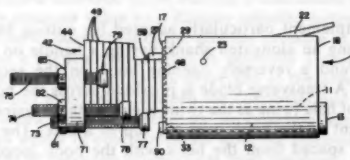
A razor of the straight razor type has closely spaced blade shields adjacent one of its ends, and an opening adjacent to but spaced from the blade shields which will receive a key of an injector cartridge with an interference fit, which may use injector blades and receive them directly from their cartridge.

3,728,789

WIRE STRIPPER

Milton G. Fischer, Banning, Calif., assignor to The Deutsch Company Electronic Components Division, Banning, Calif.

Filed June 25, 1971, Ser. No. 156,763
Int. Cl. H02g 1/12
U.S. Cl. 30—90.1 16 Claims



A coaxial wire stripper including a body having an opening through which a wire is extended, a blade being positioned transverse to the opening and resiliently biased toward it by a spring-pressed pivotal arm, a member adjacent the body being selectively indexable to position different stops adjacent the pivotal arm to limit its movement to control the stroke of the blade toward the wire, and hence the depth of the cut, this member also including axially adjustable abutments engageable by the end of the wire for controlling the amount of wire exposed past the blade, and hence the position of the cut in the wire.

3,728,790

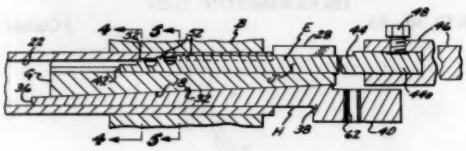
TUBE CUTTER ASSEMBLY

Sherley E. Blakeslee, 4132 Keever St., Long Beach, Calif.

Filed Jan. 3, 1972, Ser. No. 214,982
Int. Cl. B23d 21/06
U.S. Cl. 30—92.5 4 Claims

A tube cutter tool assembly, preferably actuated by an air hammer, for facilitating the removal of metallic tubes, such as boiler tubes and the like, from the sheet of a vessel in which the end portions of the tubes are sealingly positioned, and from which sheet said end portions extend outwardly.

The tool assembly, when used in conjunction with an air hammer, forms two longitudinal, transversely spaced slots on the interior surface of the sheet-engaged end portion of the tube. The weakened longitudinal section of the tube wall between the slots may be forced inwardly to provide an elongate space in the tube that permits the end portions of the tube within the sheet, as well as the portion of the tube that extends outwardly therefrom, to be crushed by suitable transversely applied forces. The crushed end portion of the tube may then be removed easily from the opening in the sheet in which it was previously sealingly positioned.



3,728,791

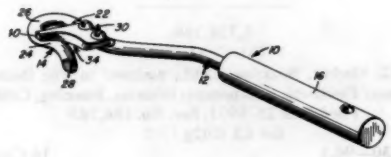
BALE TWINE CUTTER

Wesley R. Holmquist, Rt. 5, Box 349 B, Idaho Falls, Idaho

Filed Feb. 10, 1971, Ser. No. 114,269

Int. Cl. B26b *3/00*

U.S. Cl. 30—294 **2 Claims**



An implement particularly adapted for cutting bale twine comprising an elongated shank having a handle on one end thereof and a reversely opening hook on the second end thereof. A transverse blade is provided across the hook for a cutting of bale twine as the twine is guided thereagainst upon a movement of the hook over the top of a bale. The blade is laterally spaced from the hook with the hook looping rearwardly beyond the blade so as to self-cleaning in nature.

3,728,792

CUTTING BLADES FOR POWERED CARVING KNIVES

Robert Gault, Sheffield, England, assignor to J. R. A. Steel Processing, Limited, Sheffield, England

Filed Nov. 25, 1970, Ser. No. 92,797

Claims priority, application Great Britain, Nov. 28, 1969, 58,284/69

Int. Cl. B26b *9/02*

U.S. Cl. 30—355 **5 Claims**

Each of a pair of blades for use in a powered knife is formed with a bent transverse cross-section whereby the two blades together create a hollow space between the blades, whereby appreciably thinner material may be used as compared with conventional flat blades, thus representing a considerable saving of material and the hollow space acts as a clearance area for any particles or debris created by the cutting action which particles or debris would be liable to create excessive friction between or jamming of conventional flat blades. The blades are preferably made of stainless steel, and the cutting edges are preferably serrated.

3,728,793

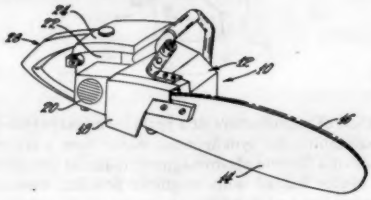
CHAIN SAW WITH DAMPING MEANS

Clifford Makinson, Rosemere, Quebec, Canada, and Arthur M. Fullerton, Toledo, Ohio, assignors to The Scott & Fetzer Company, Lakewood, Ohio

Continuation-in-part of Ser. No. 88,886, Nov. 12, 1970, abandoned. This application April 15, 1971, Ser. No. 134,374

Int. Cl. B27b *17/02*

U.S. Cl. 30—383 **17 Claims**



A chain saw is provided having means for more effectively damping or reducing shocks and vibrations transmitted between the chain saw body and the operator than means heretofore proposed for this purpose. The chain saw has two separate handles, one near the front and one near the rear, and lying in generally mutually perpendicular planes. Each handle has shock-absorbing means connecting end portions thereof to the body of the chain saw. Each shock-absorbing means at each location is specifically designed to provide maximum shock-absorbing characteristics for that position. In one embodiment, the front handle with the shock-absorbing means is readily adapted for mounting on existing chain saws.

3,728,794

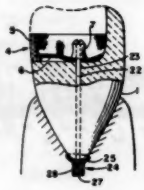
METHOD AND APPARATUS FOR TOOTH RESTORATION

Alfred E. Edelman, 2723 Federal St., Camden, N.J.

Division of Ser. No. 816,319, April 15, 1969, Pat. No. 3,583,069. This application Feb. 17, 1971, Ser. No. 116,038

Int. Cl. A61k *5/02*

U.S. Cl. 32—15 **10 Claims**



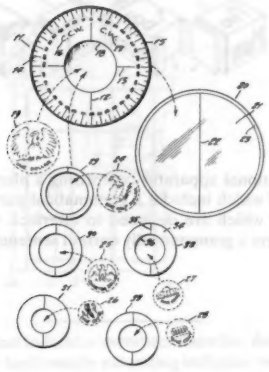
A stabilizing device for a loose tooth and a restoration for a tooth having a cavity left in the tooth by the breaking away of a relatively large portion of the tooth from the incisal and side wall surfaces thereof comprising a side wall forming plate inset in the cavity adjacent the base thereof and conforming to the normal side wall contour of the tooth portion that has broken away, a reinforcing mesh secured to the bottom of the side wall forming plate and extending inwardly forming a lining over at least a portion of the cavity, a load distributing anchor extending through the mesh and fastened to the tooth, and a dental filling of hardened plastic material filling the remainder of said cavity and shaped to conform to the normal contour of the natural tooth portion which it occupies.

3,728,795

COIN DEGREE FINDER

Peter Von Camber, 1171 Lockhaven Way, San Jose, Calif.

Filed Nov. 8, 1971, Ser. No. 196,491
Int. Cl. G07f 3/02
U.S. Cl. 33—1 N 2 Claims



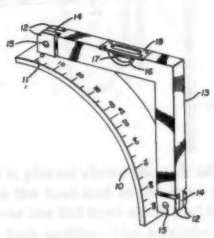
A coin degree finder, the device consisting of a 360° protractor of transparent material so to permit viewing therethrough, a circular snap on lid with a scribed center line thereacross, and the lid being made of likewise transparent material, and the device in one form of the invention also including a set of inserts each one of which is adaptable to receive a different denominator of coin, the inserts selectively being receivable in a center opening of the protractor.

3,728,796

CENTER LINE LOCATOR FOR PIPES AND THE LIKE

Lawrence E. Lobaugh, 132 Wilson Avenue, Niles, Ohio

Filed July 22, 1971, Ser. No. 165,167
Int. Cl. G01c 9/00
U.S. Cl. 33—343 5 Claims



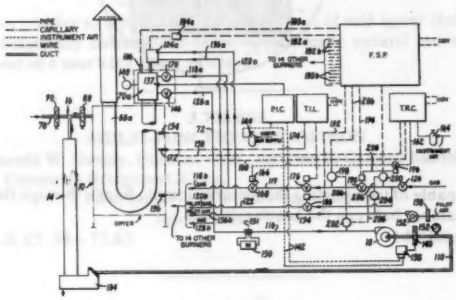
A center line locator for pipes and the like consists of an arcuate member, the curve of which matches the circumference of the pipe and an angle shaped body member secured thereto at its ends and incorporating a bubble level in one section thereof. The arcuate member is applied to a pipe and moved circumferentially thereof until the bubble level indicates a level condition whereupon indicia on the arcuate member indicate the longitudinal upper center line of the pipe and the longitudinal side center line of the pipe.

3,728,797

APPARATUS AND METHODS FOR HEAT TREATING MATERIALS AND INCINERATING VAPOROUS OFF-PRODUCTS

George M. Worden, Sr., Park Ridge, and Alexander M. Lane, Allendale, both of N.J., assignors to Wyssmont Company, Inc., Fort Lee, N.J.

Filed Nov. 16, 1971, Ser. No. 199,273
Int. Cl. F26b 3/00
U.S. Cl. 34—32 26 Claims



Material to be heat treated is passed through a rotary-tray dryer held at high temperature by burning a combustible fuel in a burner system. The vaporous off-products generated by treating of the material are withdrawn from the dryer, intermixed with outside combustion air and conveyed through a condenser, where condensable constituents are in large part removed, to the burner system to effect combustion of the fuel and incineration of noncondensable, noisome constituents of the vaporous off-products. The volumetric flow rate of air-vapor mixture delivered to the burners is maintained at a substantially constant value by a damper adjusted automatically in response to fluctuation of the mixture pressure at the burners from a predetermined level. A generally T-shaped duct connects the condenser to the dryer and to the atmosphere, and a blower interposed between the condenser and the burners creates a negative pressure on the upstream side productive of an inflow of combustion air from the atmosphere and an outflow of vaporous off-products from the dryer. Adjustable dampers are provided in the T-shaped duct to regulate the pressure drop thereacross so as to establish desired pressure levels within the dryer and at the condenser inlet. Temperature control within the dryer is effected by regulating the flow of fuel to the burners in accordance with variations in dryer temperature. A provision for over-temperature control shuts off the main fuel supply to the burners in the event the dryer temperature becomes excessively high. A flame safety system shuts down the apparatus if certain crucial conditions, such as pilot flame failure, occur.

3,728,798

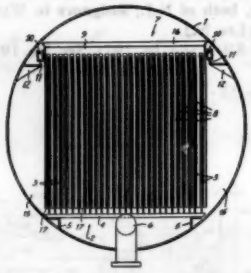
BULK FREEZE-DRYING APPARATUS

Gunter A. H. Wehrmann, Nibelungenring 30, Elmshorn/Holstein, Germany

Filed Aug. 25, 1970, Ser. No. 66,853
Int. Cl. F26b 5/06
U.S. Cl. 34—92 2 Claims

The invention refers to an apparatus for freeze-drying foodstuffs, luxuries and victuals in a chamber adapted to be closed by means of vacuum and while heating with a plurality of vertical, fixed heating devices. The chamber includes a plurality

of movable vertical receptacles (for receiving the material to be dried) alternately arranged with the heating devices and



capable of transporting the material longitudinally through the chamber between the heating devices.

3,728,799

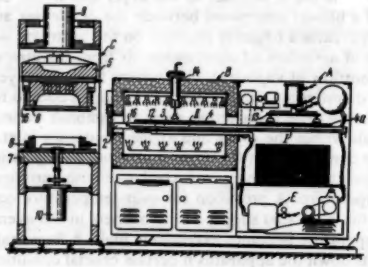
APPARATUS FOR PRODUCING THERMOPLASTIC SHEET ARTICLES

Konstantin Nikolaevich Streltsov, Leingrad, U.S.S.R., assignor to Osboe opytno-konstruktorskoe bjuro po razvitiju mekhano-pnevmaticheskoi tekhnologii, Leingrad, Strelna Krasnoselskoe shossee, 9, U.S.S.R.

Filed April 8, 1971, Ser. No. 132,393

Int. Cl. F26b *13/00*

U.S. Cl. 34—151 **2 Claims**



A machine for making articles from sheet thermoplastic material which is characterized by a group of openings provided in the smooth surface of the machine table and communicating with a source of hot gas fed under pressure to define a gas cushion supporting the blank above the table surface and assisting in the heating of the blank.

ERRATUM

For Class 35—10 see:
Patent No. 3,729,129

3,728,800

EDUCATIONAL APPARATUS

David Magram, 2304 Sherwood St., Pittsburgh, Pa.

Filed Sept. 15, 1971, Ser. No. 180,659

Int. Cl. G09b *1/36*

U.S. Cl. 35—35 J **5 Claims**

An educational apparatus comprising a plurality of blocks, each side of which includes a grammatical part of speech and the ends of which are designed to interlock with respective blocks to form a grammatically correct sentence.

3,728,801

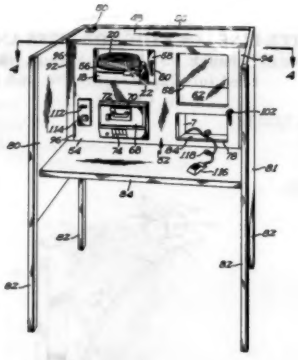
AUDIO-VISUAL TEACHING UNIT

Richard K. Beckman, Route 3, Eau Claire, Wis., and Burton H. Spangler, 307 Dodge St., Eau Claire, Wis.

Filed Nov. 8, 1971, Ser. No. 196,690

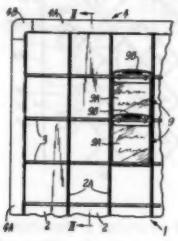
Int. Cl. G03b *21/28*

U.S. Cl. 35—60 **12 Claims**



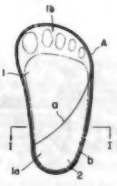
An individual study facility incorporating a projector and a tape player fully enclosed within a cabinet structure made up of modular subassemblies including a portable, readily removable optical module or chassis on which the projector and associated mirrors are supported and a removable, hingedly mounted front panel assembly on which a rear projection viewing screen and the tape player are mounted. The front panel has an access opening at one end thereof directly in front of the projector for loading slides, and a slidable door normally covering the projector access opening is movable to an open position wherein it blocks the viewing screen on the other end of the front panel to preclude use of the projector and visual aids until the projector access door has been closed.

3,728,802
CHARTS
David Maldon James, Hambrook Hall, near Chichester, England, assignor to Beanstalk Shelving Limited, Sussex, England
Filed Dec. 7, 1970, Ser. No. 95,575
Claims priority, application Great Britain, Dec. 8, 1969, 59,876/69
Int. Cl. G09f 3/20
U.S. Cl. 35—73 15 Claims



A wall chart and indicator members therefor, the chart having substantially horizontally extending indicator member supports with which the indicator members can be engaged to hang therefrom.

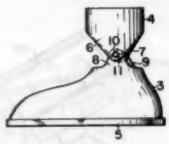
3,728,803
INFANT SHOES
Yaichiro Hirasawa, Yokohama, and Masakatu Ousuga, Shizuoka, both of Japan, assignors to Fujidai Rubber Industry Co., Ltd., Shin-dori, Shizuoka-shi, Japan
Filed Sept. 2, 1971, Ser. No. 17[illegible]
Claims priority, application Japan, [illegible], 1971, 45/11257
Int. Cl. A43b
U.S. Cl. 36—2.5 E 5 Claims



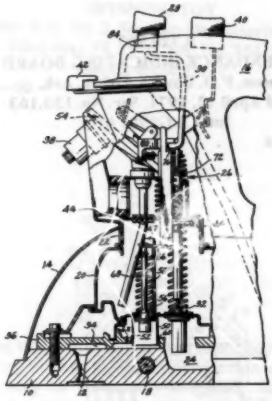
A rigid member is placed above the sole of an infant's shoe, and extends across the heel and to the base of the fifth toe to provide support over the full heel width and forward along the outer edge of the foot outline. The effective width of the infant's foot is thus increased to permit more stable standing and walking by the infant.

3,728,804
SKI BOOT
Yoshinari Mochizuki, Tokyo, Japan, assignor to Hope Kabushiki Kaisha, Tokyo, Japan
Filed July 9, 1971, Ser. No. 161,212
Claims priority, application Japan, July 10, 1970, 45/60982
Int. Cl. A43b
U.S. Cl. 36—2.5 AL 3 Claims

In a ski boot which outer shell comprises a rigid lower shell enclosing substantial portions of a foot, and a rigid upper shell in the form of an ankle cuff connected to the lower shell, the upper shell is movable to a forwardly outwardly inclined position relative to a boot sole. The movement of said upper shell substantially corresponds to an anatomically natural movement of a user's leg about an ankle.



3,728,805
MULTI-FUNCTION STEAM IRON
Harold W. Gowdy, Ontario, Calif., assignor to General Electric Company, Bridgeport, Conn.
Filed May 31, 1972, Ser. No. 258,424
Int. Cl. D06f 75/06
U.S. Cl. 38—77.83 14 Claims

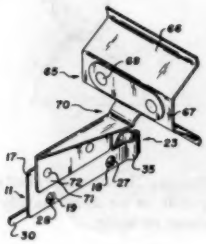


The invention is directed to a self-cleaning steam iron with means to purge the iron through the soleplate by providing a substantially separate large opening in the iron's water tank with a dump valve so the water can be suddenly dumped onto the hot soleplate. With the additional steam suddenly generated, the entire tank, steam distribution system, and ports are completely and forcefully purged of water, steam, loose residues, and entrapped lint. An additional function to this self-cleaning combination uses the same structure with a separate steam knob to actuate the dumping structure separately and in pulses to provide a surge of steam through the soleplate upon actuation. The same knob, on continuous actuation, converts the iron into a dry iron. Thus, common structure provides a multi-function steam iron.

3,728,806
SIGN HOLDER
Peter Kostiuk, Box 1798, Williams Lake, British Columbia, Canada
Filed Sept. 3, 1970, Ser. No. 69,403
Int. Cl. G09f 3/18
U.S. Cl. 40—11 R 1 Claim

A sign holder is provided having a clip formed of a base member and a spring pressed clamping member. The base and

clamping members have openings and sign-puncturing pins which project into the aforesaid openings. Mounting means is



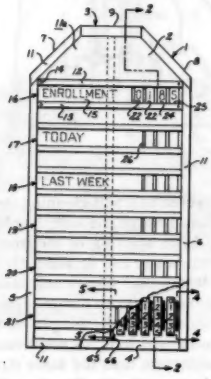
provided for securing the clip in a selected position near the products which are priced and/or advertised by the sign.

3,728,807

ATTENDANCE INDICATING BOARD

Walter Lee Jameson, P.O. Box 72, Fisher, Ark.

Filed April 12, 1971, Ser. No. 133,163
Int. Cl. G09f 11/02
U.S. Cl. 40—77.6 **5 Claims**



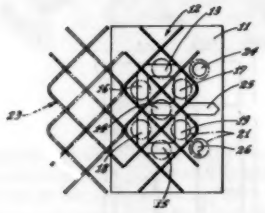
An attendance indicating board with letters that can be changed and numerals which can be changed quite rapidly by rotating indicator drums on which the numerals are displayed. Rotations of the numeral bearing drums is accomplished by manipulating control discs accessible from the rear of the attendance board and which are connected to the numeral drums by rubber bands to drive the drums when the control discs are rotated. There are plural rows of drums, one row in horizontal alignment with each row of letters. The rubber bands which provide the drive connection between the control discs and the drums also restrain the drums against accidental rotation by urging same transversely against their shafts thereby increasing friction between the drums and the shafts.

3,728,808

BAR SEGMENT READOUT LIGHT SHIELD

Harold F. Rieth, Costa Mesa, Calif., assignor to Industrial Electronic Engineers, Inc., Van Nuys, Calif.

Filed Aug. 24, 1970, Ser. No. 66,474
Int. Cl. G09f 13/06
U.S. Cl. 40—130 E **20 Claims**



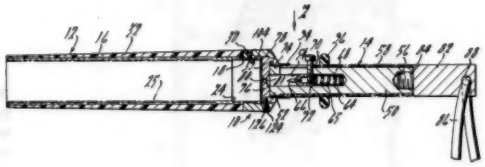
A readout light shield comprising four slotted elements which may be assembled to form an eggcrate having a plurality of rectangular cells into each of which a light may be placed for illumination of a specific portion of a bar segment readout. The ratio of the lengths of the adjacent sides of the cells may be altered to adjust the angle at which a viewer sees the numerals or characters which are displayed by the readout without causing the horizontal segments to become non-horizontal.

3,728,809

PROJECTILE LAUNCHER BATON

Stephen F. Mulich, San Ramon, and James A. Sweeney, Walnut Creek, both of Calif., assignors to MBAssociates, San Ramon, Calif.

Filed Oct. 2, 1970, Ser. No. 77,526
Int. Cl. F41c 3/00, 27/00
U.S. Cl. 42—13 **10 Claims**



A projectile launcher in the form of a stun baton, or night stick, which is comprised of a barrel assembly, having a receiver therewithin its inward end, and a coaxial handle assembly which includes a firing mechanism, a firing mechanism safety, and a breech member disposed at one end thereof.

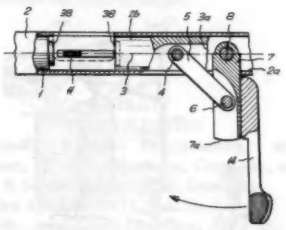
Tee receiver end of the barrel assembly and the breech breech end of the handle assembly are respectively connected to opposing halves of a novel split collar ring. The halves of the collar ring are hinged axially for rotatably pivoting the handle portion transversely with the face of the receiver to provide for insertion of the projectile, and after firing for removal of the spent cartridge. A releasable locking mechanism is further provided to lock and align the assemblies in coaxial orientation whereupon release of the mechanism allows the pivotable rotation of the assemblies for disassociation therewith.

3,728,810

FIREARMS, ESPECIALLY SPORTS OR TARGET PISTOL

Edwin Rohr, Wettingen, Switzerland, assignor to Vishuy Intertechnology, Inc., Malvern, Pa.

Filed Sept. 16, 1970, Ser. No. 72,578
Claims priority, application Switzerland, Oct. 14, 1969, 15470/69
Int. Cl. F41c *19/00, 11/00*
U.S. Cl. 42—69 A 8 Claims



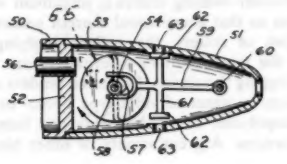
A firearm, particularly a sports or target pistol, comprising an angle-lever breechblock mechanism, wherein an actuating or cocking lever is laterally mounted on the pistol for actuating the angle-lever breechblock mechanism.

3,728,811

PLUG TYPE FISHING LURES

Emory L. Weimer, Orondo, Wash.

Filed Feb. 16, 1971, Ser. No. 115,585
Int. Cl. A01k *85/00*
U.S. Cl. 43—26.2 7 Claims



A plug body has in it a cavity in which a water driven rotor is rotatively mounted. A water conduit in the plug body has an intake opening positioned forwardly of the rotor and a discharge opening positioned to direct water onto the rotor to rotate the same. The weight of the rotor is off-center relative to its axis of rotation and when said rotor is rotated the off center weight will cause said rotor to vibrate and impart to the plug body an erratic movement alluring to fish. Means controlled by the rotor to jet water sidewise from the plug body and further increase its erratic movement is also provided.

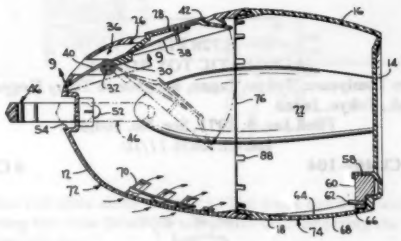
3,728,812

TROLLING BUCKET

Richard G. Woolworth; Anthony J. Souza, both of Lancaster, and Harper Landell, Fort Washington, all of Pa., assignors to Woodstream Corporation, Lititz, Pa.

Filed April 19, 1971, Ser. No. 133,631
Int. Cl. A01k *97/04*
U.S. Cl. 43—55 2 Claims

A trolling bucket for holding live minnows or similar live bait and adapted to be towed behind a boat, comprising a hollow shell of resilient polyethylene or similar material and having a streamlined hull-like bottom surface portion. A pair of closed pockets or chambers disposed on either side of the interior of the hollow shell, generally at the water line, are filled with a foamed plastic material such as polyurethane, to provide flotation of the bucket while being towed. A weight is provided to orient the trolling bucket when floating and an inwardly pivotable access door is provided in the top surface of the shell, to provide access to the interior thereof. The forward end portion of the bucket includes an elongated recess into which handle means for the bucket are slidably retractable so as to be substantially flush with the exterior surface of the bucket. The lower wall portion has an elongated channel which forms a keel-like rib on the exterior of the bucket.

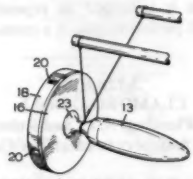


3,728,813

SPINNING TOY

J. Paul Jolliffe, R.R. No. 2, Stevensville, Ontario, Canada

Filed May 18, 1972, Ser. No. 254,370
Int. Cl. A63h *27/12*
U.S. Cl. 46—60 7 Claims



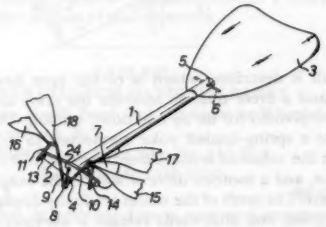
A spinning toy of the diabolo type is provided with a central spindle having threads at both ends to which a pair of flat circular discs may be threadably mounted; one disc may be removed and a pointed foot substituted therefor. The provision of the alternate forms permits a learner to progress from a balanced structure to an unbalanced one.

3,728,814

TOY ORNITHOPTER WIND-DRIVING MECHANISM

Gary Richard Ruston, 71, Harcourt Road, Redland, Bristol, England

Filed Jan. 17, 1972, Ser. No. 218,368
Int. Cl. A63h *27/00*
U.S. Cl. 46—74 R 7 Claims



This invention provides a toy ornithopter which has an elongated body and two pairs of wings at the front with a driving

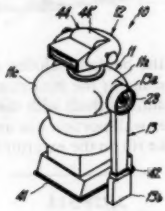
mechanism including a cranked drive member arranged so that the wings move in pairs in out-of-phase relation with one pair moving up as the other pair moves down. The driving mechanism includes either articulated linkages connected to the wings or a specially shaped fitment on which the wings are mounted so arranged as to cause the wings to undergo the desired motion.

3,728,815

ACROBATIC TOY ROBOT

Eijiro Tomiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan

Filed Jan. 5, 1971, Ser. No. 104,052
Int. Cl. A63h *11/10*
U.S. Cl. 46—104 **4 Claims**



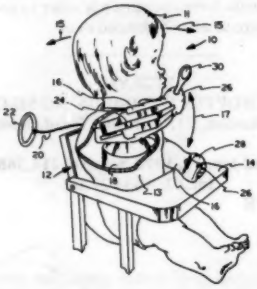
An acrobatic toy robot which comprises a body having a head and rotatable arms, wheel means for driving the robot on a supporting surface and power means in operative connection with said arms and said wheel means, said arms being arranged to overturn the robot when the latter comes into contact with an obstruction and to cause the robot to perform a somersault-like movement when the same is overturned, whereby the robot is arranged to repeat travelling in an upright position and performing such a comical movement.

3,728,816

CLAMORING DOLL

Burt W. Ensmann, Flushing, N.Y., and Robert E. Davis, North Branford, Conn., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed April 21, 1971, Ser. No. 136,018
Int. Cl. A63h *13/00*
U.S. Cl. 46—116 **4 Claims**



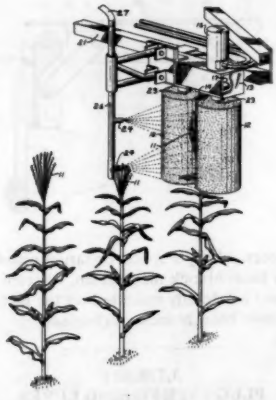
A doll is described which is of the type having a spring motor and a drive train to animate the arms and head. The arms are pivoted for an up and down motion. The drive train includes a spring-loaded yoke connected to drive the arms through the required arcuate displacement, a driven finger on the yoke, and a toothed drive wheel on the output spindle of the motor. The teeth of the wheel gradually displace the finger on the yoke, and afterwards release it abruptly. This abrupt release action, in combination with irregular spacing of the teeth about the spindle, helps to simulate an impatient clamoring activity.

3,728,817

PREVENTING SHEDDING OF POLLEN BY APPLYING BINDER TO CORN TASSELS

John Robert Huey, Princeton, Ill.; Otto B. Wurzburg, Oldwick, N.J., and Clyde D. Goldsberry, Minburn, Iowa, assignors to Moews Seed Company, Granville, Ill. and National Starch and Chemical Corporation, Plainfield, N.J.

Filed May 28, 1971, Ser. No. 148,022
Int. Cl. A01h *1/02*
U.S. Cl. 47—58 **13 Claims**



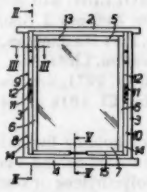
In raising hybrid corn seed, the necessary exclusion of pollination by pollen from the seed-parent plant is achieved by applying to the tassels of those plants, shortly before pollen-shedding time, a binder which physically prevents the shedding of pollen. The preferred method of application is by driving a high clearance tractor through the field carrying sets of rotating binder-bearing rollers in alignment with the seed-parent plants so that every tassel thereof passes through the bite of a set of rollers, the rollers applying the binder throughout the tassel. Among alternatives are spraying and selectively fogging the tassels. Preferred binders are fine particle dispersions in water of vinyl type homo- or copolymers, such as a copolymer of vinylchloride and butyl acrylate of equal proportions. A great variety of other binders may be used.

3,728,818

REVERSIBLE SASH WINDOWS

Alan Felix Lovatt, Sunbury-on-Thames, England, assignor to Code Designs Limited, Sunbury-on-Thames, Middlesex, England

Filed Feb. 4, 1971, Ser. No. 112,653
Claims priority, application Great Britain, Feb. 12, 1970, 6,834/70
Int. Cl. E05d *15/52*
U.S. Cl. 49—192 **6 Claims**



A window includes a window frame and a window sash that may be swung outwardly or doubled back to expose the out-

side window surface at a location convenient for cleaning. A metal frame surrounds the sash and includes upper and lower parts hinged together at a middle portion of the sash. The upper metal frame part is pivotally connected to the upper end of the sash, and the lower metal frame part is fixed to the window frame. A locking device is slidable into one position which locks the upper metal frame part to the window frame so that the sash may swing open relative to the metal frame. The locking device is slidable into another position which locks the sash to the upper metal frame part for inward swinging movement about the central hinges.

3,728,819

VEHICLE DOORS

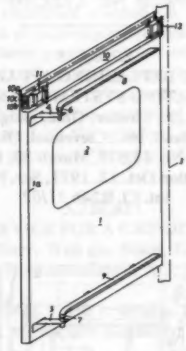
Horst Goldbach; Rudolf Brandenburg, and Erich Dabringhausen, all of Heiligenhaus, Germany, assignors to Arn Kiekert & Sohne, Heiligenhaus, Germany

Filed April 28, 1971, Ser. No. 138,032

Claims priority, application Germany, April 28, 1970, P 20 20 576.9; June 23, 1970, P 20 30 799.7; Aug. 29, 1970, P 20 42 936.1; Oct. 28, 1970, P 20 52 764.4; Dec. 21, 1970, P 20 62 822.2; Dec. 31, 1970, P 20 64 678.0

Int. Cl. E05d *15/10*

U.S. Cl. 49—216 **10 Claims**



A swinging, sliding door for vehicles, said door comprising at least one door panel, a guide track mounted on the panel, at least one roller guided in the track and a telescopic guide having at least two sections, one of the sections being mounted on the door panel and another of the sections being adapted to be mounted on the body of a vehicle by means of guide members. The telescopic guide extends essentially parallel to the upper edge of the door panel and the sections of the telescopic guide are arranged to move substantially parallel to each other on movement of the door.

3,728,820

CASEMENT WINDOW LIMIT STOP ASSEMBLY

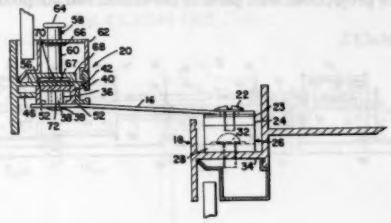
Herbert Lange, San Mateo, Calif., assignor to Soule Steel Company, San Francisco, Calif.

Filed Sept. 13, 1971, Ser. No. 179,743

Int. Cl. E05f *11/00*

U.S. Cl. 49—346 **4 Claims**

A casement window limit stop assembly in which a spring arm is pivotally connected to the casement frame. The window sash is provided with a track within which a shoe, attached to the spring arm, slides. There is a bore within the track into which the shoe is biased and which stops movement of the window. A push button on the window sash and aligned with the bore permits pushing the shoe out of the bore so that



the shoe can slide along the track. The track has a cut-out for removing the shoe from the track thus disconnecting the arm from the window.

3,728,821

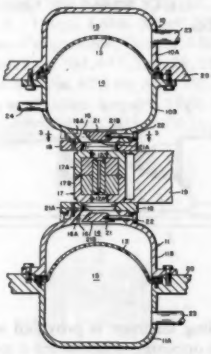
MACHINE FOR FINISHING SURFACES

Kenneth E. Perry, Wellesley, Mass., assignor to Dynetics Corp., Woburn, Mass.

Filed Sept. 13, 1971, Ser. No. 179,629

Int. Cl. B24b *7/00, 9/00*

U.S. Cl. 51—2 R **10 Claims**



A machine including two hollow members, each divided into two chambers with a diaphragm being the divider between the chambers, one of the chambers of each of the devices adapted to receive fluid to push the diaphragm in a direction to force abrasive material adapted to be held in the second chamber through an orifice extending outwardly from the second chamber, and a baffle positioned in the orifice to prevent expansion of the diaphragm through said orifice and to direct the flow of abrasive material into said second chamber when said hollow members are positioned to cooperatively move abrasive material through a workpiece held between the orifices of said members.

3,728,822

APPARATUS FOR HANDLING PARTS

Myron C. Noble, South Bend, Ind., assignor to Wheelabrator-Frye Inc., New York, N.Y.

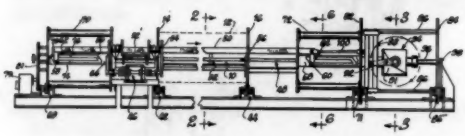
Filed Feb. 2, 1971, Ser. No. 111,914

Int. Cl. B24c *3/08, 9/00*

U.S. Cl. 51—15 **20 Claims**

This invention is addressed to a new and improved apparatus for handling heavy metal parts, such as displacement of the part through a blast zone in which the parts are subjected to surface treatment including a rotating tunnel

adapted to receive parts in sliding engagement therethrough and a reciprocating drawbar having projections thereon adapted to be displaced toward the tunnel for engagement of the projections with parts in the tunnel and adapted to be displaced away from the tunnel for disengagement of the projections from the parts in the tunnel during reciprocation of the drawbar whereby parts are advanced through the tunnel in a spaced relation by the projections on the reciprocating drawbar.



3,728,823

THREAD GRINDING MACHINE

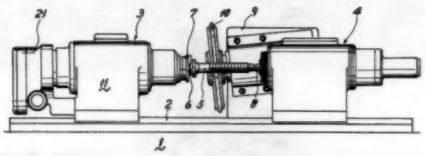
Tamaki Tomita, Okazaki; Kunihiko Unno, and Akiyoshi Kobayashi, both of Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed April 29, 1971, Ser. No. 138,478

Claims priority, application Japan, May 5, 1970, 45/38059

Int. Cl. B24b *3/00, 5/00*

U.S. Cl. 51—95 TG **7 Claims**



A thread grinding machine is provided with a head stock and a tail stock in opposing relation and a spindle for supporting one end of a workpiece to be thread ground is rotatably and axially slidably mounted on fluid bearings in the head stock being threadably engaged with a feed screw shaft secured to the head stock. Rotation of the spindle causes a simultaneous axial sliding movement thereof to grind a helical form in the workpiece. A holding shaft for supporting the other end of the workpiece is mounted on fluid bearings for slidable movement axially in the tall stock and is urged toward the head stock under a constant force sufficient to rotatably support the workpiece.

3,728,824

AUXILIARY WORKPIECE SUPPORTING MEANS FOR PRECISION GRINDING MACHINES

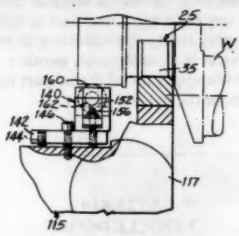
Glover C. Joyce, Worcester, Mass., assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed April 26, 1971, Ser. No. 137,481

Int. Cl. B24b *5/42*

U.S. Cl. 51—105 SP **13 Claims**

In a precision grinding machine including mutually spaced workpiece supporting assemblies rotatable about a common axis and each incorporating a relatively fixed clamping jaw disposed to support one end of a workpiece during successive workpiece unloading and loading operations and a cooperating relatively movable clamping jaw selectively movable into and out of engagement with a workpiece supported in the cooperating relatively fixed clamping jaw; auxiliary work supporting means mounted upon each workpiece supporting assembly adjacent to its relatively fixed clamping jaw, operative, whenever the relatively movable clamping jaw is released, to support and remove a portion of the weight of the workpiece off the adjacent relatively fixed clamping jaw, including, means operative to facilitate axial and/or angular rotary movement of a workpiece engaged by the auxiliary supporting means for precise axial and/or angular positioning of the workpiece relative to the respective relatively fixed clamping jaws.



ERRATUM

For Class 51—103 see:
Patent No. 3,729,300

3,728,825

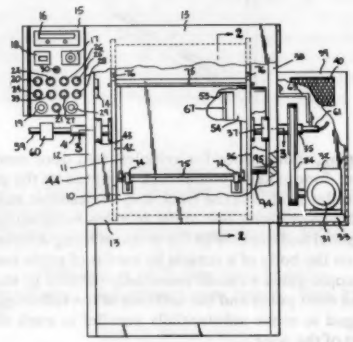
CRYOGENIC DEFLASHING APPARATUS AND OPERATING SYSTEM FOR SAME

Charles D. Barrett, Jr., Mentor, Ohio, assignor to Burdett Oxygen Co. of Cleveland, Inc., Cleveland, Ohio

Substitute for Ser. No. 23,875, March 30, 1970, abandoned. This application Oct. 12, 1971, Ser. No. 188,488

Int. Cl. B24b *31/02*

U.S. Cl. 51—164 **3 Claims**

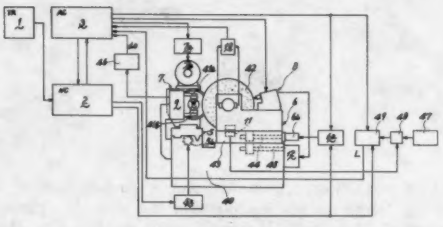


An apparatus for removing the molding flash from normally soft or resilient molded parts, such as rubber, which utilizes a non-symmetrical tumbling barrel for tumbling and mixing the parts to be deflashed. Low temperature fluid is fed into the barrel to cause freezing or embrittlement of the molded parts to a predetermined extent and temperature-responsive speed control is used for rotation of the tumbling barrel to achieve uniform results and improved efficiency in the cost and effectiveness of the deflashing operation. The temperature sensing probe is isolated from the parts being tumbled, but is so located as to more accurately reflect the temperature of the parts, rather than the temperature of the atmosphere in the barrel. The electric motor utilized to drive the tumbling barrel is disposed in the path of exhaust flow of the cryogenic gas so as to be cooled thereby to reduce the heat factor and consequently the power requirements.

3,728,826
GRINDING MACHINE HAVING AN ADAPTIVE CONTROL SYSTEM

Ryuji Wada; Hideo Nishimura, both of Kariya; Hayashi Kodama, Takahama, and Taisuke Kawamata, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 6, 1971, Ser. No. 205,150
Claims priority, application Japan, Dec. 19, 1970, 45/114509
Int. Cl. B24b 49/16
U.S. Cl. 51—165.77 5 Claims

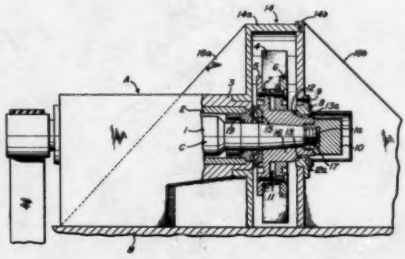


A grinding machine is provided which is capable of decreasing the grinding resistance exerted on the grinding wheel thereof towards an objective grinding resistance as a number of grinding operations proceed. A current optimum grinding resistance is calculated on the basis of the objective grinding resistance and the number of grinding operations. The feeding speed of the grinding wheel is controlled such that the grinding resistance exerted on the grinding wheel may be maintained equal to the current optimum grinding resistance.

3,728,827
SAFETY DEVICE FOR A GRINDING SPINDLE

Georg Koppenwallner, Weil der Stadt, Germany, assignor to Fortuna-Werke Maschinenfabrik AG, Stuttgart-Bad Cannstatt, Germany

Filed Sept. 1, 1971, Ser. No. 176,992
Claims priority, application Germany, Sept. 5, 1970, P 20 44 046.4
Int. Cl. B24b 41/00
U.S. Cl. 51—168 7 Claims



The specification discloses a safety device for a grinding machine wheel in which the receiving head, or hub, on which the wheel is mounted is clamped to a spindle shaft by a threaded clamp element and has a guiding surface on the side facing away from the frame of the machine. The frame also has a guiding surface facing the guiding surface on the receiving head and cooperating therewith to support the receiving head radially while confining the receiving head axially in the event the threaded clamp element becomes loose on the shaft.

3,728,828
CUE TIP TRIMMER

Gerald Allen Freedman, P.O. Box 503, Worcester, Mass.

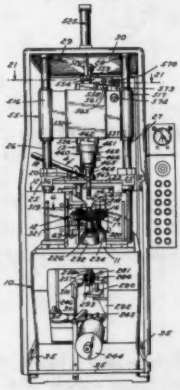
Filed Nov. 23, 1971, Ser. No. 201,328
Int. Cl. B24d 7/02, 7/18
U.S. Cl. 51—204 2 Claims

This cue tip trimmer is an abrasive wheel, shaped to easily trim cue stick tips and refinish the same as they are worn.

3,728,829
GEAR HONING MACHINE

Myron P. Ellis, Royal Oak; Albin S. Czubak, Detroit, and McDonald Keith A., Union Lake, all of Mich., assignors to Micromatic Hone Corporation, Detroit, Mich.

Division of Ser. Nos. 701,447, Jan. 29, 1968, Pat. No. 3,525,178, and Ser. No. 65,160, Aug. 19, 1970, Pat. No. 3,699,724. This application Aug. 19, 1970, Ser. No. 64,940
Int. Cl. B24b 47/02, 41/06, 5/18
U.S. Cl. 51—215 H 14 Claims

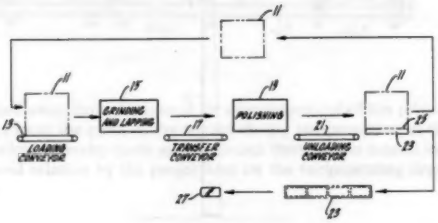


A multi-surface machining apparatus and method for simultaneously machining the center bore of a gear workpiece concentric to the pitch circle of the gear teeth, and machining one or both of the end faces of the gear workpiece perpendicular to the axis of the center bore. The gear workpiece is rotated in a centerless manner by a pair of master gears comprising a driving gear and a braked retainer gear. The master gears improve the surface finish characteristics of the tooth flanks of the gear teeth while rotating the gear workpiece. Simultaneously, a first machining means is reciprocated axially in the gear workpiece center bore, and a second machining means is reciprocated over one or both of the end faces of the gear workpiece in a direction perpendicular to the axis of the center bore.

3,728,830
PROCESS OF PRODUCING DAY/NIGHT MIRRORS

Paul D. Maca, Western Springs, Ill., assignor to Sommer Maca Glass Machinery Company, Chicago, Ill.

Filed Sept. 13, 1971, Ser. No. 179,926
Int. Cl. B24b *1/00*
U.S. Cl. 51—283 6 Claims

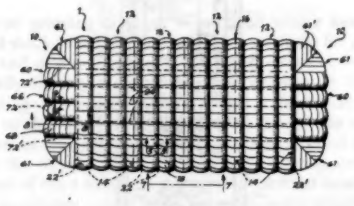


A method of manufacturing mirrors for use in automotive day/night mirror assemblies. A wide bevel is formed along one edge of a sheet of mirror stock. The beveled portion is cut from the mirror stock and another bevel is formed on the mirror stock along the cut edge. These steps are repeated until the entire usable portion of the sheet of mirror stock is cut into beveled strips. The mirrors are pattern or shape cut from the beveled strips.

3,728,831
SQUARE ENDED AIR INFLATED STRUCTURES

Walter W. Bird, Williamsville, N.Y., assignor to Birdair Structures, Inc., Buffalo, N.Y.

Filed May 12, 1971, Ser. No. 142,445
Int. Cl. E04b *1/345*
U.S. Cl. 52—2 17 Claims

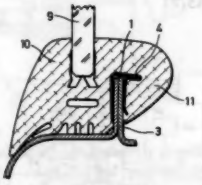


An air inflated structure having generally squared end sections when viewed in plan. Each end section includes an end portion having a partial generally cylindrically shaped surface and a pair of corner portions having partial generally spherically shaped surfaces. Each end portion includes an air inflated envelope portion formed of a plurality of horizontally elongated panels, which are edge joined to vertically adjacent panels; and a cable system comprising a series of widely spaced, flexible tension devices. The tension devices are anchored adjacent their lower ends, connected adjacent their upper ends to tension transmitting cables arranged within and extending lengthwise of the central section, and fixed intermediate their respective ends one to each of the envelope panels. Support columns may be arranged within the structure in engagement with the fittings connecting the tension devices and transmitting cables to prevent collapse of the structure in the event of sudden loss of inflating air.

3,728,832
CONNECTION OF A WINDOW PANE TO A FRAME

Karl Erck, Wolfsburg, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed Nov. 23, 1970, Ser. No. 91,686
Claims priority, application Germany, Nov. 26, 1969, P 19 59 295.1
Int. Cl. E06b *3/62*
U.S. Cl. 52—400 18 Claims

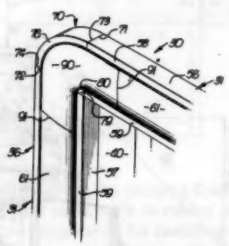


In combination: a frame defining a window opening and having flange means surrounding the opening, clamping means of substantially U-shaped profile straddling the flange means and having first and second legs extending substantially parallel to the flange means and respectively on opposite sides thereof, sealing strip means of elastic material and mounted on the frame and flange means and having a first recess therein, a window pane received in the first recess, the clamping means also having a ridge extending therefrom adjacent the bottom of the profile in a direction away from the window pane and the first leg of the profile which is located on that side of the flange means which faces away from the window pane, the sealing strip means having a second recess for receiving the flange means and clamping means including the ridge.

3,728,833
FRAME CONSTRUCTION HAVING ARCUATE CORNERS AND A CONTINUOUS FEATURE STRIP

Abraham Grossman, 9339 Rhea Avenue, Northridge, Calif.

Filed March 11, 1971, Ser. No. 123,252
Int. Cl. E06b *1/04*; E04c *2/38*
U.S. Cl. 52—211 5 Claims



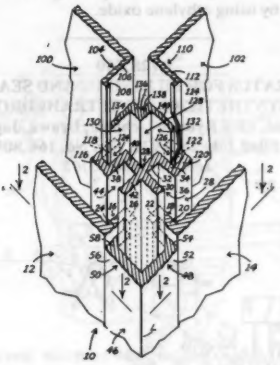
A frame construction for an opening in a wall of a mobile home or the like providing continuous weather sealing means for sealing engagement with the wall and providing an arcuate corner construction whereby a feature or molding strip of continuous and unbroken appearance surrounds the opening and enhances the appearance of the frame construction. A corner member having the configuration of a sector of a circle and providing a curved or arcuate continuation of the linear feature strips of the horizontal and vertical frame members of the frame construction.

3,728,834

BUILDING CORNER ASSEMBLY

Abner Dean, 166 E. 61st St., New York, N.Y.

Filed July 16, 1971, Ser. No. 163,281
Int. Cl. E04b 1/54, 5/00
U.S. Cl. 52—282 12 Claims



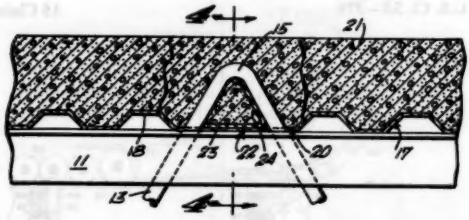
A building corner assembly is provided for joining a pair of walls which lie in intersecting planes. Both walls terminate in arms which also lie in intersecting planes. The assembly also includes a post which has a pair of channels running along its length. The assembly further includes a corner lock which also has a pair of arms. One arm of the corner lock and the arm of one wall fit into one channel of the corner post, and the other arm of the corner lock and the arm of the other wall fit into the other channel of the corner post. The arms of the walls protrude toward the arms of the corner lock within their respective channels of the corner post and thereby enter into an interlocking relationship.

3,728,835

COMPOSITE CONCRETE SLAB AND STEEL JOIST CONSTRUCTION

Ira J. McManus, 39 Lincoln Avenue, Florham Park, N.J.

Filed Nov. 5, 1970, Ser. No. 87,067
Int. Cl. E04b 1/16
U.S. Cl. 52—334 3 Claims



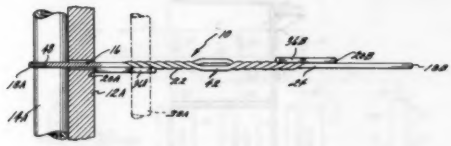
A composite action open web steel joist and concrete slab interconnection is described. In one form of the invention, upper apex portions of the steel joist webbing protrude through the upper chord members of the joist, and through apertures provided in the sheet metal formwork placed over such joists prior to the pouring of the concrete slab, whereby said protruding apex portions will be encased within the slab to act as shear interconnection devices therein. Wedge members forced between such protruding joist apex portions and the sheet metal formwork serve to mechanically secure the joist and formwork together, to prevent leakage of the poured concrete through the sheet metal formwork openings, and to enhance the locking of the concrete slab to the protruding joint apex portions.

3,728,836

CONCRETE FORM TIE AND REBAR CHAIR

Robert C. Gates, Lakewood, Colo., assignor to Gates & Sons, Inc., Denver, Colo.

Filed Dec. 27, 1971, Ser. No. 211,994
Int. Cl. E04c 5/16; E04g 17/06
U.S. Cl. 52—687 6 Claims



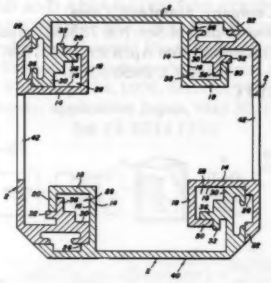
This invention relates to an improved twisted wire concrete form tie characterized by a lower single-wire strand joined to an upper double-wire twisted section by a pair of return bends at opposite ends, all of which cooperate with one another to define an elongate endless loop. The portions of the length of wire that are laid side-by-side and twisted together to form the twisted section terminate in free ends that are bent to form upstanding stops with upwardly opening generally U-shaped rebar saddles on the inside thereof. The section of the return bend projecting outwardly beyond the adjacent stop is slightly longer on one end than the other.

3,728,837

MODULAR STRUCTURES

Augustine J. Kiefer, Jr., 201 Link Avenue, Ross Township, Allegheny County, Pa.

Filed Feb. 25, 1971, Ser. No. 118,824
Int. Cl. E04h 12/00, 17/20
U.S. Cl. 52—731 10 Claims

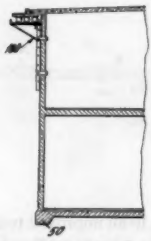


A modular structure includes elongated modular members which are assembled into a multi-sided panel or post. Each modular member has a side extending the width of the member. A web spaced inwardly from a first end of the side extends from the inner surface of the side toward the first end and a first flange extends from the end of the web toward the inner surface but with an entry slot therebetween. The web and flange form a first opening. A second web extends from the inner surface at the other end. A second flange is attached to the second web in spaced relationship therewith on the side toward the first web so as to provide a second opening having an entry slot. In most cases the modular members are assembled with the first flange of each member in the second opening of the adjacent member.

3,728,838
METHOD FOR MAKING CAST-IN-PLACE CONCRETE STRUCTURES

Robert K. Stout, Hamburgo, Num. 75, 9° Piso, Mexico City, 6, D. F., Mexico

Filed Sept. 1, 1971, Ser. No. 176,891
Int. Cl. E04g *11/08, 17/08*
U.S. Cl. 52—742 7 Claims

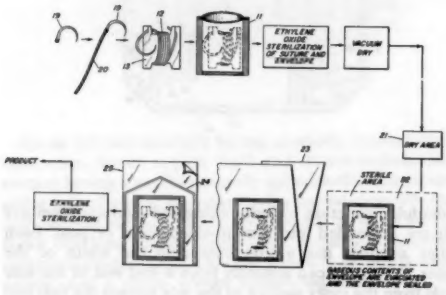


A complete monolithic concrete structure having any desired architectural form and appearance is constructed in a series of operations wherein the foundation, the interior and exterior walls, and the roof are cast-in-place. The foundation and walls are sequentially formed by first temporarily interconnecting a plurality of relatively small concrete forms, after which moist concrete is allowed to cure within the forms. A temporary supporting structure is then erected to support the roof form. After the roof structure has cured, the temporary supporting structure is removed. The required electrical, plumbing, and reinforcing elements are embedded in the cast-in-place structures, and suitable framed openings are left in the wall structures to accept doors and windows.

3,728,839
STORAGE STABLE SURGICALLY ABSORBABLE POLYGLYCOLIC ACID PRODUCTS

Arthur Glick, Danbury, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 788,501, Jan. 2, 1969, abandoned. This application April 29, 1971, Ser. No. 138,425
Int. Cl. B65b *55/10*
U.S. Cl. 53—21 FC 6 Claims

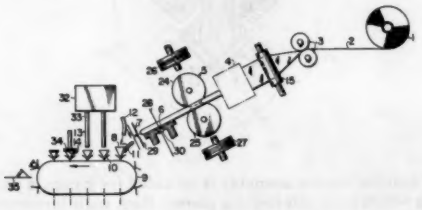


A dry absorbable synthetic surgical element of a polymer subject to hydrolytic degradation to non-toxic, tissue-compatible, absorbable components, such as a polyglycolic acid suture, is package in an air-tight sealed container which is substantially impervious to water vapor such as a laminate film having a metallic foil layer. The gaseous contents of the envelope are, prior to sealing the suture within the envelope, either evacuated or replaced with a gas which is inert towards said surgical element and which is substantially free from water. The water content should be below 0.5 percent by weight of the weight of the surgical element, and preferably is below 0.05 percent by weight. Polyglycolic acid sutures and other elements thus packaged retain acceptable levels of strength for at least one year at storage temperatures of 72°F. and ambient humidity outside the package. The contents may be sterilized by using ethylene oxide.

3,728,840
APPARATUS FOR FILLING UP AND SEALING A SYNTHETIC RESIN TETRAHEDRON

Shinjiro Izumi, 18-7 Ryouke 1-chome, Urawa, Japan

Filed July 28, 1971, Ser. No. 166,809
Int. Cl. B65b *43/08*
U.S. Cl. 53—29 10 Claims

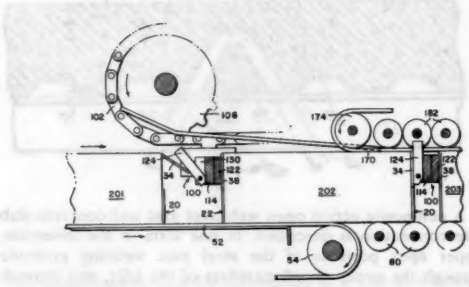


Apparatus and method for forming a container having no longitudinal seam by passing a flatly folded continuous length of tubular material comprising a pair of oppositely positioned longitudinal folds through means for compressing said folds together while a transverse heat seal is formed at an end of said tubular material perpendicularly to said folds. After the heat sealing operation, the folds are released and the cut edges will separate to form an open mouth into which substances to be stored may be placed. A cover is subsequently sealed to the cut edges to close the container.

3,728,841
CASE SEALER

John E. Ullman, Huntingdon Valley, Pa., assignor to Huntingdon Industries Incorporated, Bethayres, Pa.

Filed Dec. 15, 1971, Ser. No. 208,131
Int. Cl. B65b *51/10*
U.S. Cl. 53—376 15 Claims



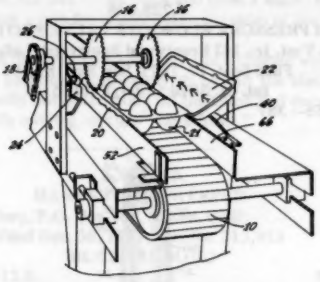
A high speed end sealer for cases of the end-closing type in which the cases are fed horizontally into a compression unit and are moved horizontally through the compression unit by pusher bar assemblies carried by an endless chain. The pusher bar assemblies press the end flaps against the end walls of the case providing the necessary gluing pressure therefor. Also, pressure is applied to the top of the case to cause the top manufacturers flap to be glued in position as the case moves through the compression unit.

3,728,842

CARTON CLOSING MACHINE

Roy Bruce Wyland, Arcadia, Calif., assignor to Henry Y. Kuhl and Paul R. Kuhl, Sr., Flemington, N.J., part interest to each

Filed Jan. 21, 1972, Ser. No. 219,807
Int. Cl. B65b 7/26
U.S. Cl. 53—376 5 Claims



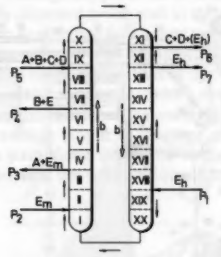
An improved machine is provided which is particularly adapted for closing styrofoam egg cartons, and the like. The cartons are carried on a conveyor past two spaced powered toothed creasing wheels, which score the cartons at the hinge lines. The cartons are then carried by the conveyor past ramps and bending bars which close the cover, and which also close a locking lip on each carton into a locked position with the cover.

3,728,843

PROCESS FOR CONTINUOUS SEPARATION OF LIQUID OR GAS MIXTURES ON A FIXED BED OF SOLIDS

Zoltan Nagy, Budapest; Zsigmond Sebestyen, Veszprem; Laszlo Szepesy, Budapest, and Istvan Feher, Veszprem, all of Hungary, assignors to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet, Veszprem, Hungary

Filed Sept. 29, 1970, Ser. No. 76,543
Claims priority, application Hungary, Oct. 2, 1969, 2,024
Int. Cl. B01d 53/04
U.S. Cl. 55—25 18 Claims



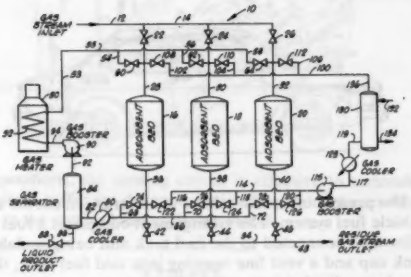
Fluid mixtures are continuously separated on a fixed bed of solids, for example by absorption, by establishing at least four zones in each of which different fluid flow conditions obtain. In one of the zones at least one of the components is separated and in another of the zones at least one of the separated components is removed. In still another of the zones, a fluid is introduced at relatively high pressure and withdrawn at relatively low pressure so as to create the needed pressure differential throughout the system, the direction of flow of this last fluid being opposite the direction of flow of the mixture undergoing separation. The zones are periodically simultaneously shifted all in the same direction.

3,728,844

VAPOR ADSORPTION PROCESS

Charles F. Snyder, Conroe, Tex., and Burton M. Casad, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Aug. 19, 1971, Ser. No. 173,059
Int. Cl. B01d 53/04
U.S. Cl. 55—33 4 Claims



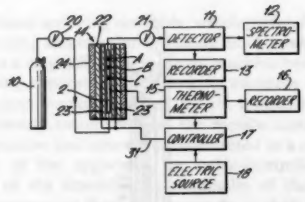
The present invention relates to an improved vapor adsorption process, and more particularly, to an adsorption process for removing desired components from an inlet gas stream. By the present invention a bed of solid adsorbent is contacted with a selected adsorbable material during the regeneration thereof, which material has the property of being displaced from the adsorbent bed by desired components contained in the inlet gas stream and a heat of desorption equal to or greater than the heat of adsorption of the desired components. When the bed is contacted with the inlet gas stream, desired components contained therein are adsorbed thereby displacing the previously adsorbed selected adsorbable material from the bed which results in the temperature of the bed remaining relatively constant and the utilization of the maximum bed adsorption capacity.

3,728,845

METHOD AND APPARATUS FOR STRIPPING THE COMPONENTS OF A MIXED SAMPLE FROM A TRAP

Tatsuro Haruki, and Muneaki Itaya, both of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed Sept. 14, 1970, Ser. No. 71,908
Claims priority, application Japan, May 30, 1970, 45/46648
Int. Cl. B01d 15/08
U.S. Cl. 55—67 7 Claims

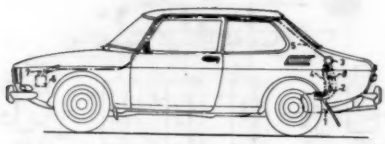


Method and apparatus for taking out the components of a mixed sample from a trap having a stationary phase therein where the sample components have been separately fixed at different positions. The whole effective length of the trap is simultaneously heated, and a "stripping" fluid is passed through the trap kept at the temperature so that the sample components are separately and successively elute.

3,728,846
ARRANGEMENT FOR A MOTOR VEHICLE FUEL SYSTEM

Dan Leo Nilsson, Sjuntorp, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden

Filed July 22, 1971, Ser. No. 165,122
Claims priority, application Sweden, Aug. 3, 1970, 10623/70
Int. Cl. B01b *53/06*
U.S. Cl. 55—159 **3 Claims**

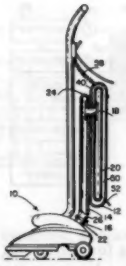


The present invention relates to an arrangement for a motor vehicle fuel system. The arrangement comprises a fuel tank, a filler tube connected to the fuel tank and being sealable by a tank cap and a vent line opening into said fuel tank, the vent line being divided into at least two parts, e.g. a lower and an upper vent line. The vent line is connected to a filter means, which is connected to the intake system of the motor. This filter is capable of accumulating and filtering fuel vapors coming from the fuel tank, so that these vapors will not pollute the atmosphere. Instead, the vapors are sucked into the motor and burned when the motor is operating. The arrangement is chiefly characterized in tat the lower vent line, which is connected to the fuel tank, and one end of the upper vent line open into the filler tube at a place adjacent to the tank cap. Further, the end of the lower vent line opening into the filler tube can be sealed by means of a valve operated by the tank cap, the valve being arranged to close when the tank cap is removed and to open when the tank cap is mounted, and further, the upper vent line between the filler tube and the filter reaches, in a previously known way, substantially up to the highest point of the vehicle and constitutes a liquid trap for a gas-liquid mixture destined for the filter means.

3,728,847
FILTER AND DUST COLLECTING BAG FOR UPRIGHT VACUUM CLEANERS

Sol Howard, and Robert Schaaf, both of Brooklyn, N.Y., assignors to Mil-An Mfg. Corp., Brooklyn, N.Y.

Filed Aug. 17, 1970, Ser. No. 64,397
Int. Cl. B01d *46/04*
U.S. Cl. 55—371 **8 Claims**

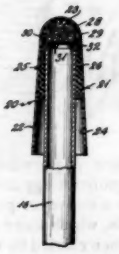


A vacuum cleaner dust collecting bag having a main bag of an air permeable material and an air conducting tube. The tube is provided with an intake coupling at one end with the other end being secured to the main bag. A dust-tight coupling collar extends from the tube into the main bag for communication therebetween. The coupling collar is adapted for the attachment thereto of a disposable lining or insert of an air permeable material to collect the dust. The dust collecting bag is adapted for readily attaching to or detaching from an upright vacuum cleaner. The main bag is provided with opening and closing elements for the insertion or removal of the lining.

3,728,848
HIGH PRESSURE BLOW-OFF VALVE PROTECTOR

James C. Vest, Jr., 142 Brentwood Boulevard, Lafayette, La.

Filed Sept. 17, 1971, Ser. No. 181,496
Int. Cl. B01d *53/04*; **F16l** *55/10*
U.S. Cl. 55—387 **4 Claims**

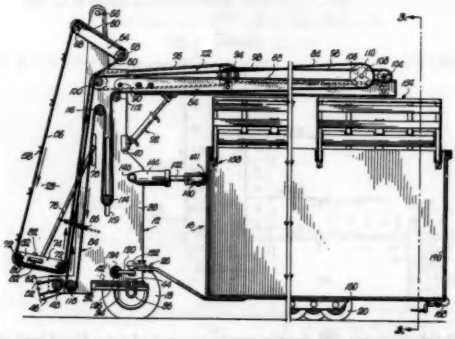


Apparatus mountable on the vent pipe of a high pressure blow-off valve for excluding foreign materials from the vent pipe and the blow-off valve and for maintaining a dry atmosphere within the vent pipe to minimize oxidation.

3,728,849
HAY LOADER

Ezra Cordell Lundahl, Providence, Utah, assignor to Hesston Corporation, Hesston, Kans.

Filed Nov. 14, 1969, Ser. No. 876,944
Int. Cl. A01d *89/00*
U.S. Cl. 56—1 **14 Claims**



In the harvesting of agricultural crops, the crop is lifted off the ground continuously by a pickup unit as the vehicular harvesting machine is advanced across the field along the crop windrow. The machine has a crop-handling assembly which includes an elevator for receiving the crop from the pickup unit and continuously raising the crop to a level higher than the bed of the crop-receiving body of the machine. The crop-handling assembly also includes a conveyor which continuously receives the crop from the upper end of the elevator and moves the crop in a horizontal direction rearwardly for dumping into the open top of the body.

The conveyor is extensible fore and aft of the body so that as the crop gravitates from the rear end of the conveyor it is spread evenly front to rear of the body. The entire elevator-conveyor assembly and the pickup unit thereon are also shiftable laterally with respect to the wheeled vehicle to spread the crop evenly from side to side of the body.

The crop is fed between the side walls of the body and between upward extensions of such walls, and those extensions are shifted against the crop from time to time to compress it against the bed of the body and form a stack. Each extension also has a ram for compressing the sides of the stack in the body.

The body is tiltable rearwardly and has a tailgate which may be unlocked and swung upwardly to permit the stack to be pushed rewardly out of the body off the tilted bed through use of a rearwardly moving, upright "false front."

3,728,850

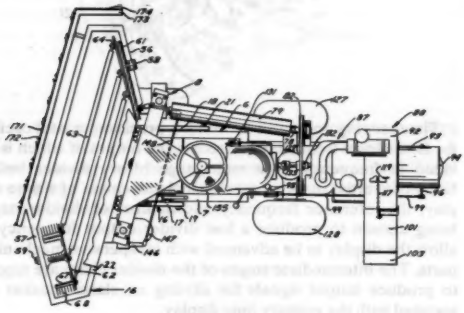
HARVESTING SWEEPER

Howard E. Flory, P.O. Box 908, Salida, Calif.

Filed Dec. 30, 1971, Ser. No. 213,913

Int. Cl. A01d *43/02*

U.S. Cl. 56—12.8 **5 Claims**



A harvesting sweeper has an elongated carriage movable in the direction of the carriage length in an orchard. A vertically adjustable, angularly disposed brush reel at the forward end of the carriage is driven to displace fallen nuts to form a windrow parallel to the carriage length and along one side of the carriage. A blower on the rearward portion of the carriage simultaneously and variably operated with the brush reel, discharges air to the other side of the carriage in a direction transverse to the carriage length to displace nuts and leaves transversely from a path along that other side of the carriage to prepare that other side for the subsequent use of the brush reel.

3,728,851

ELECTRIC CIRCUIT FOR HARVESTER AUTOMATIC HEADER CONTROL

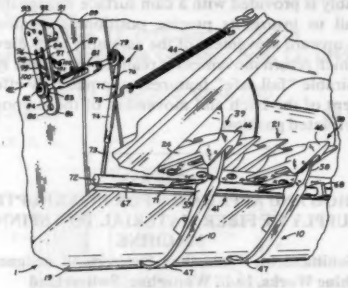
Ferne R. Van Antwerp, Rural Route No. 1, Unionville, Iowa

Continuation-in-part of Ser. No. 645,740, June 13, 1967, Pat. No. 3,611,686. This application Oct. 12, 1971, Ser. No. 188,380

Int. Cl. A01d *67/00*

U.S. Cl. 56—208 **4 Claims**

An electrical circuit for automatically controlling the height of the header of a harvester has a single manual control that has a RAISE position, a HOLD position, and an AUTOMATIC position. In the AUTOMATIC position, a multiple contact sensing switch is connected in the circuit to determine height, and a height control switch connected to the sensing switch provides a choice of height. In both the RAISE and



HOLD positions, the sensing circuit is effective to maintain the header a sufficient distance above the ground to prevent damage to the cutting head of the harvester.

3,728,852

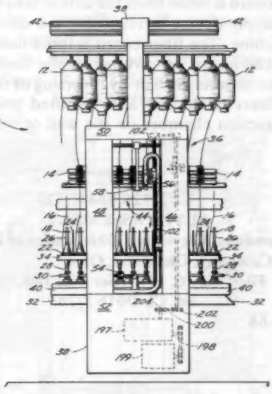
SERVICING ASSEMBLY FOR AUTOMATIC YARN PIECING APPARATUS

Gordon C. Anderson, and Albert D. Harmon, both of Clemson, S.C., assignors to Maremont Corporation, Chicago, Ill.

Filed June 3, 1971, Ser. No. 149,501

Int. Cl. D01h *15/00*

U.S. Cl. 57—34 R **22 Claims**



The disclosed servicing assembly, which preferably includes yarn-positioning and traveler-threading mechanisms, is operable adjacent a ring rail of the spinning machine being serviced by the piecing apparatus. The servicing assembly is mounted by a compound bracket upon an upright splined shaft, which shaft is rotatably mounted upon the mobile carriage of the piecing apparatus and operatively connected to a control cam mechanism of the apparatus, for cable-controlled vertical movement of the assembly longitudinally of the shaft and horizontal movement thereof in response to shaft rotation. A spring biased latch normally maintains the assembly in an elevated position above the maximum elevation of the ring rail of the spinning machine serviced by the apparatus. Release of the latch permits gravity descent of the assembly from its elevated position, whereupon a support member connected thereto is biased from a retracted position to an extended position wherein it overlays and engages the ring rail and thereby supports the assembly for vertical movement in unison therewith. Rotation of the splined shaft about its axis effects

desired movement of the entire assembly horizontally toward and away from the spinning machine, and produces desired relative movement between a yarn depressor and other servicing components of the assembly. The yarn depressor preferably is provided with a cam surface engageable with the ring rail to insure its precise positioning relative thereto. Return upward movement of the assembly to its elevated position, which return movement is realized by a cable system having desirable "fail-safe" features, automatically effects re-engagement of the latch and movement of the support member to its retracted position.

3,728,853

METHOD AND APPARATUS FOR INTERRUPTING THE SUPPLY OF FIBER MATERIAL TO A SPINNING MACHINE

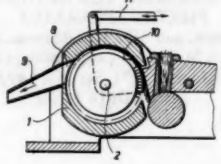
Adolf Schiltknecht, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterhur, Switzerland

Filed July 21, 1971, Ser. No. 164,576

Claims priority, application Switzerland, July 23, 1970, 11159/70

Int. Cl. D01h 1/12

U.S. Cl. 57—58.95 **10 Claims**



The fiber beard is lifted from the action area of the combing roll of the supply device in response to a disturbance in the spinning machine. The fiber beard is lifted mechanically by a baffle or is eliminated by pivoting of the feed roll assembly away from the combing roll or by reversing of the transporting belts. The fibers beard can also be lifted pneumatically by means of a suction chamber on the wall of the combing roll housing.

3,728,854

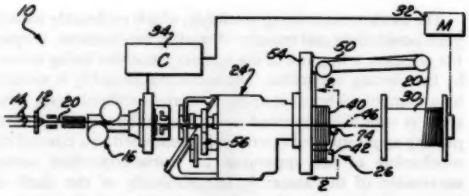
FLYER ASSEMBLY

Valdas S. Ramunas, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Filed May 6, 1971, Ser. No. 140,818

Int. Cl. D01h 7/26

U.S. Cl. 57—68 **16 Claims**



An improved flyer assembly for twisting a strand of material in either of two directions and winding the twisted strand of material onto a spool includes a pair of capstans which are rotated about a central axis of the flyer assembly to twist the strand. A floating guide wheel or roller guides the strand from the central axis of the flyer to one of the capstans. Since the direction of rotation of both the flyer assembly and the capstans is reversed when the twist of the strand is reversed, the guide wheel is freely movable between a first position in which the strand is initially fed to one side of a capstan and a second position in which the strand is initially fed to the opposite side of the capstan. If the strand should break during a twisting operation, the end portion of the length of strand leading to the spool is held against one of the capstans by a retainer roller to prevent spilloff and whipping movement of the strand.

3,728,855

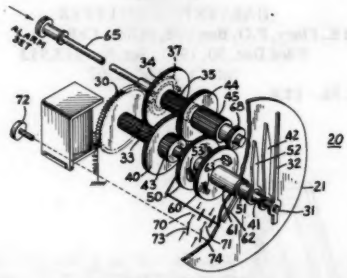
CRYSTAL CONTROLLED MOVEMENT WITH FREQUENCY DIVIDING CIRCUITRY

Ralph H. Preiser, La Salle, Ill., assignor to General Time Corporation, Phoenix, Ariz.

Filed Jan. 22, 1970, Ser. No. 4,865

Int. Cl. G04c 21/12, 21/16

U.S. Cl. 58—38 **9 Claims**



Timekeeping apparatus in which a precision crystal oscillator is used as a frequency reference, the output of which is divided in frequency by a multi-stage binary divider before being converted to effect mechanical movement of a time display, the reference frequency and number of divider stages being chosen to produce a low divider output frequency to allow the display to be advanced with inexpensive mechanical parts. The intermediate stages of the divider chain are tapped to produce output signals for driving an alarm speaker associated with the primary time display.

3,728,856

AIR-COOLED INTERNAL COMBUSTION ENGINE WITH SUPER-CHARGING, ESPECIALLY MULTI-FUEL INTERNAL COMBUSTION ENGINE

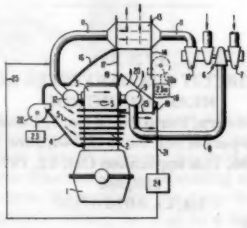
Hans O. Scherenberg, Stuttgart-Heumaden, Germany, assignor to Daimler-Benz Aktiengesellschaft

Filed Feb. 11, 1971, Ser. No. 114,633

Claims priority, application Germany, Feb. 21, 1970, P 20 08 159.8

Int. Cl. F02b 37/04

U.S. Cl. 60—13 **33 Claims**



An air-cooled internal combustion engine with supercharging by means of a supercharger driven preferably by an exhaust gas turbine, particularly a multi-fuel internal com-

bustion engine, in which a heat-exchanger is arranged in the flow of the supercharged air between the supercharger and the inlet of the internal combustion engine and in that this heat-exchanger is disposed in the discharge air flow of the air serving for the cooling of the internal combustion engine.

3,728,857

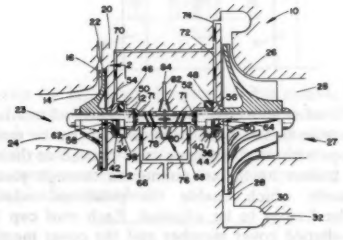
TURBO-COMPRESSOR-PUMP

Kenneth E. Nichols, Arvada, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed June 22, 1971, Ser. No. 155,497

Int. Cl. F01k *25/00*

U.S. Cl. 60—36 **17 Claims**



A turbo-compressor-pump unit utilizing a common working fluid in the turbine, compressor, pump, and as libricant. A dynamic sealing and bearing means maintains separation of the working fluid at different energy or pressure levels within the turbo-compressor-pump unit.

3,728,858

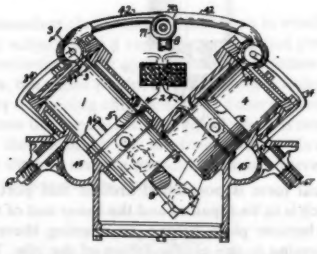
EXTERNAL COMBUSTION ENGINE

George C. Sorensen, 589 S. E. 4th St., Ontario, Oreg.

Continuation-in-part of Ser. No. 800,200, Feb. 18, 1969, abandoned. This application Aug. 28, 1970, Ser. No. 68,395

Int. Cl. F01k *21/04*

U.S. Cl. 60—39.01 **1 Claim**



A steam engine is provided in which exhaust products of combustion from the boiler are introduced into the power cylinder after the expansion stroke. The exhaust products are then compressed providing a heating step for boiler feedwater circulating about the power cylinder. At the end of compression stroke, steam is injected into the power cylinder to drive the piston.

3,728,859

FUEL NOZZLE FOR GAS TURBINE ENGINES

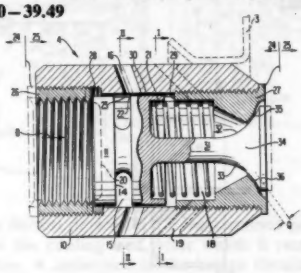
Bernd Seiler, Ampermoching near Munich, Germany, assignor to Motoren-Und Turbinen-Union Muenchen GmbH, Munich, Germany

Filed Sept. 11, 1970, Ser. No. 71,478

Claims priority, application Germany, Sept. 12, 1969, P 19 46 153.1

Int. Cl. F02c *3/24;* **B05b** *1/30*

U.S. Cl. 60—39.49 **24 Claims**



A fuel nozzle for gas turbine engines in which the fuel jets leaving the fuel metering sections draw-in air delivered by the compressor of the gas turbine engine through passages provided in the nozzle housing; a piston-shaped insert is arranged in the nozzle housing to move relative to the latter so as to vary the quantity of compressor air to be supplied to the fuel nozzle and/or the quantity of the fuel/air mixture to be discharged from the nozzle as the piston-shaped insert means is displaced.

3,728,860

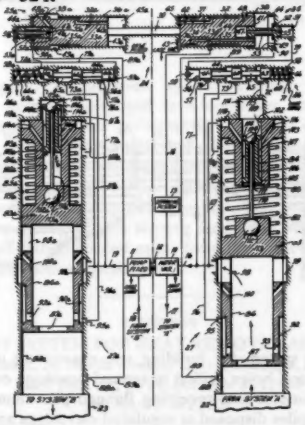
REVERSIBLE FLUID POWER TRANSFER APPARATUS

James L. Coakley, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.

Division of Ser. No. 91,114, Nov. 19, 1970. This application March 17, 1972, Ser. No. 235,495

Int. Cl. F15b *15/18*

U.S. Cl. 60—52 R **9 Claims**

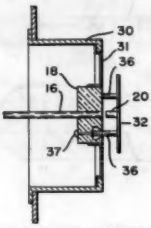


In a reversible fluid power transfer package, sensing means detect which of two mechanically interconnected fluid pressure translating devices is required to operate as a pump and which is required to operate as the motor. In response to a signal from the sensing means, dual-functioning check valve-flow limiter components associated with each device are ported according to the required mode of function of the respective device, so that whichever device is to operate as the motor is automatically provided with a flow limiter valve, and whichever device is to operate as the pump is automatically coupled to a check valve on its outlet side. The check valve may incorporate variable bypass features.

3,728,861
ION THRUSTER WITH A COMBINATION KEEPER ELECTRODE AND ELECTRON BAFFLE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Eugene V. Pawlik, La Canada, and Dennis J. Fitzgerald, Pasadena, both of Calif.

Filed Dec. 20, 1971, Ser. No. 209,535
Int. Cl. F03h 5/00
U.S. Cl. 60—202 6 Claims

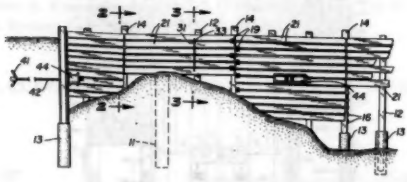


An ion thruster is disclosed in which the cathode front end, surrounded by our insulator, is mounted flush with the front end of the flanged portion of the cathode pole piece. The thruster's baffle positioned in front of the cathode's front end supports the thruster's keeper electrode which is spaced apart and directed to the cathode's open end. The baffle is at the keeper's electrode potential.

3,728,862
SHORING SYSTEM AND COMPONENTS THEREFOR

John A. Meredith, Denver, Colo., assignor to Meredith Drilling Co., Inc., Denver, Colo.

Filed June 23, 1971, Ser. No. 155,928
Int. Cl. E02d 17/04
U.S. Cl. 61—39 12 Claims

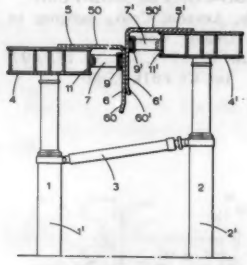


A shoring system for building site excavating operations utilizing caisson holes drilled in spaced positions outside the building perimeter and receiving flanged pile elements with paired main piles disposed at regulated elevations and spacing and having vertically spaced support sockets adapted to receive fastener components for the support of horizontally disposed cribbing pieces that are placed progressively in inverted order to hold back loose materials as the foundation excavation is deepened. Threaded or wedge-set flange clamps are inserted in slots between adjacent cribbing pieces to engage the flanges of intermediate pile elements to provide additional cribbing support. Deadman anchors are driven outwardly into the surrounding loose materials on earth, and a cable tensioning system interconnects the anchor and waler frames placed inwardly to additionally resist forces tending to collapse the shoring system.

3,728,863
MINE ROOF SUPPORT ASSEMBLIES

Istvan Hidasi, Viola u 7, Hungary, assignor to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Sept. 14, 1971, Ser. No. 180,325
Int. Cl. E21d 17/00
U.S. Cl. 61—45 D 6 Claims

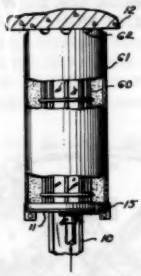


A mine roof support assembly composed of two independently movable frames each consisting of two or more telescopic props with roof engaging caps carried at their upper ends, the frames being interconnected through piston and cylinder units which enable the positional relationship between the frames to be adjusted. Each roof cap bears a slidable L-shaped cover member and the cover members of the frames have depending limbs which abut one another between the frames. A curved leaf spring is attached to each of the roof caps and has its ends slidably guided on the associated cover member so as to maintain the cover members in engagement with one another.

3,728,864
APPARATUS FOR REPAIRING STEEL SUPPORTING PILES

George C. Wiswell, Jr., 1014 Pequot Road, Southport, Conn.

Filed March 4, 1971, Ser. No. 121,005
Int. Cl. E02d 5/60, 15/04
U.S. Cl. 61—54 5 Claims



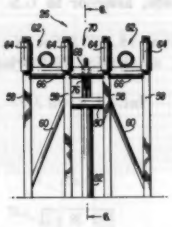
A cylindrical form is positioned around that portion of a steel pile which is to be repaired and the lower end of the form closed by a bottom plate having an opening therethrough closely conforming to the configuration of the pile. The bottom plate is provided with a nipple to which a hose is detachably connected through which concrete is pumped. Setscrews in the nipple are threaded into a groove on the hose insert to hold the insert into position. The bottom plate is released from the concrete by means of a plurality of bolts threaded into nuts secured on the bottom plate so that threading the bolts inwardly causes the bolt ends to push against the concrete and release the bottom plate therefrom.

3,728,865

PIPELINE LAYING OPERATIONS WITH DIVERSE PENETRATION ANGLES

Joe C. Lochridge, Houston, Tex., assignor to Brown & Root, Inc., Houston, Tex.

Filed Aug. 11, 1971, Ser. No. 170,780
Int. Cl. F16l *1/00*; B63b *35/04*
U.S. Cl. 61—72.3 9 Claims



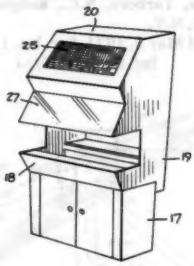
Apparatus for laying an elongate flexible means, such as a pipeline, from a surface vessel into a body of water. The vessel is provided with a plurality of essentially predetermined feed paths for diverse penetration angles into the water. The feed paths are continuously available for use depending upon the size of the pipeline to be laid.

3,728,866

EXHAUSTLESS CLEAN ROOM WORK STATIONS

Howard M. Layton, Pound Ridge, N.Y., assignor to Interlab, Inc., Pleasantville, N.Y.

Filed July 8, 1971, Ser. No. 160,664
Int. Cl. F25b *49/00*
U.S. Cl. 62—126 10 Claims



An exhaustless clean room work station in which work to be treated is subjected to a vapor-generating wet process, which vapor contaminates the atmosphere. To maintain clean room standards, the vapor produced at the station is drawn through a chimney containing chilling coils or other means functioning to condense the vapor to form a liquid which is returned to the process, the resultant dry air being forced through a submicronic filter to remove particulate matter therefrom before the air is returned to the station.

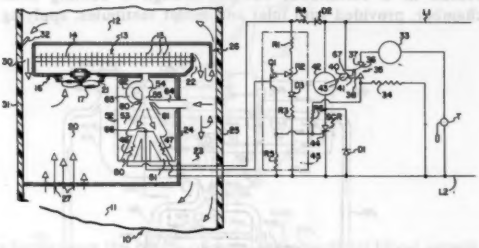
3,728,867

DEFROST CONTROL SYSTEM

Jay H. Jarrett, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed April 29, 1971, Ser. No. 138,673
Int. Cl. F25d *21/02*
U.S. Cl. 62—140 4 Claims

A fluid flow amplifier senses increased differences in air pressure on opposite sides of the cooling unit of a forced air refrigerating system due to clogging of the cooling unit by frost, and alters the resistance in a bridge circuit type amplifier which controls one SCR in the circuit of a hysteresis synchronous timer motor which operates switching mechanism to effect a defrost cycle. The switching mechanism



operates a defrost device for a predetermined period to melt frost from the cooling unit, after which it restores normal refrigeration. A resistance in the bridge circuit amplifier is located adjacent an air passage in the fluid flow amplifier to maintain the walls of the air passage above the air temperature.

3,728,868

CRYOGENIC REFRIGERATION SYSTEM

Ralph C. Longsworth, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 6, 1971, Ser. No. 204,883
Int. Cl. F25b *41/04*
U.S. Cl. 62—222 8 Claims

A cryogenic refrigeration system wherein in a heat exchanger normally disposed in a container and having a Joule-Thompson orifice provided in one end of the heat exchanger to promote liquefaction of a working fluid by expansion, there is included means to control the flow of fluid through the orifice. The refrigeration system is characterized in that flow through the orifice is regulated by a valve which is activated by a temperature sensing fluid filled bulb-activating means combination spaced apart from the orifice toward the warm end of the heat exchanger.

3,728,869

COOLANT SYSTEM FOR HEAT REMOVAL APPARATUS

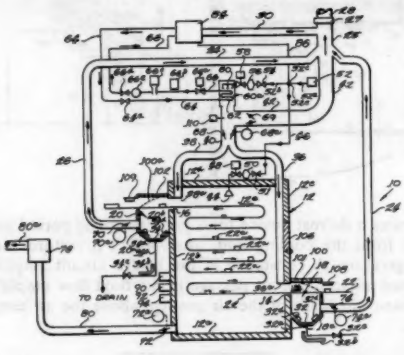
Harry Schmidt, 20 North Wacher Drive, Chicago, Ill.

Filed Dec. 27, 1971, Ser. No. 211,933
Int. Cl. F25d *23/02*
U.S. Cl. 62—266 11 Claims

A system and apparatus is provided for continuous coolant of products such as food products with liquid refrigerants which apparatus minimizes atmospheric contamination with gaseous refrigerant and is useful in the recovery of the condensable, normally gaseous refrigerant. The apparatus comprises a cooling chamber having inlet and outlet vestibules, conveying means for transporting products such as food products through the cooling chamber via the vestibules, means for applying and distributing refrigerant in liquid form to the food product while in said chamber, recovery traps associated with the vestibules for gravitational recovery of gase-

ous refrigerant, conduits leading from the traps to recirculate the gaseous refrigerant to a compressor, means for compression and liquification of the gaseous refrigerant and conduit means for conducting liquified refrigerant to the distributing means.

A process for the cooling of food or other products is also provided which comprises passing units of product to be cooled in a continuous stream through a cooling zone chamber, provided with inlet and outlet vestibules, applying



liquid refrigerant to products in the chamber, which refrigerant is normally gaseous and heavier than air at ambient operating temperatures, to thereby reduce the temperature of the produce, regulating the rate of introduction of refrigerant into said chamber to provide a slight positive refrigerant gas pressure in said chamber, recovering the gaseous refrigerant at inlet and outlet vestibules by gravitational separation from atmospheric air, liquifying the gaseous refrigerant and recycling the liquified refrigerant in the process.

3,728,870

PROGRESSIVELY ACTING CENTRIFUGAL REGULATORS

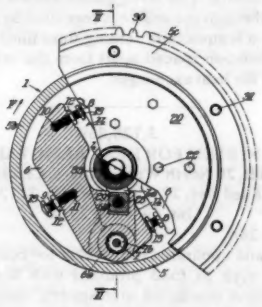
Andre Vuaille, Lyon, France, assignor to Societe Industrielle Generale des Mecanique Appliquee S.I.G.M.A., Paris, France

Filed Feb. 16, 1971, Ser. No. 115,431

Claims priority, application France, Feb. 16, 1970, 7005433

Int. Cl. F16d 5/00

U.S. Cl. 64—25 **6 Claims**



The device is for insertion between a driven rotary member and a coaxial drive rotary member for progressively varying the angular position between them as a function of the speed of the drive member. The device is useful for regulating the injection lead angle for Diesel engines. The regulator is a self-contained assembly containing centrifugally-acting weights and torsion bars which are pre-set by screw stops enabling the limiting angular positions of the weights to be adjusted and consequently the minimal speed at which the regulator comes into play and the amplitude of the relative angular displacement between the driving and driven members.

3,728,871

COUPLING FOR SHAFTS

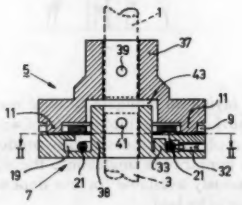
Cornelis Wilhelmus Adrianus Clijsen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 15, 1971, Ser. No. 153,243

Claims priority, application Netherlands, June 19, 1970, 7008983

Int. Cl. F16d 3/14

U.S. Cl. 64—27 R **4 Claims**



A coupling for shafts comprising a coupling disc and two connecting flanges. A spring is located in one of the flanges for eliminating rotational play in conjunction with a cam on the other connecting flange. Clamping means are provided to clamp said spring free from the cam for assembly purposes.

3,728,872

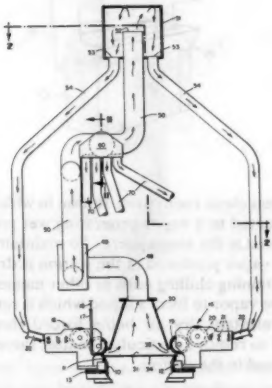
METHOD AND APPARATUS FOR KNITTING SLIVER HIGH PILE FABRICS

Thomas J. Thore, Tarboro, N.C., assignor to Glenoit Mills, Inc., New York, N.Y.

Filed May 3, 1971, Ser. No. 139,516

Int. Cl. D04b 9/14

U.S. Cl. 66—9 B **15 Claims**



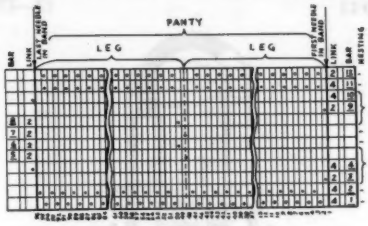
A pneumatic system for sliver high pile fabric knitting machines whereby the usual air jets, disposed adjacent the needle circle and operative during knitting, are eliminated, and suction is employed for retaining the sliver fibers on the needles during knitting and for removing loose fibers from within the needle circle to a location remote from the needle circle, from which location the loose fibers either may be handled as waste or conveyed back to the machine for re-delivery to the needles.

3,728,873

MACHINE KNITTING

Seymour C. Titone, Birchrunville, Pa., assignor to Titone Research & Development Corporation, Burlington, N.J.

Filed Dec. 29, 1967, Ser. No. 694,655
Int. Cl. D04b 23/02
U.S. Cl. 66—87 4 Claims



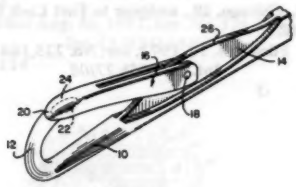
This invention relates to machine knitting of fabric, especially warp-knitting of tubular fabric. It provides a method of continuously forming seamless tubular fabric on a Raschel or similar flat-bed machine having a pair of parallel needle bars, particularly seamless tubular fabric having a different number of tubular portions for a given bed width at one part of the run than at another part. Continuity of knitting action and stitch is maintained throughout, including during conversion between different numbers and widths of different tubular portions.

3,728,874

STRADDLE LATCH NEEDLE

Robert F. Kelly, and Joseph T. Speetjens, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Aug. 19, 1971, Ser. No. 173,040
Int. Cl. D04b 35/04
U.S. Cl. 66—121 15 Claims



This is a latch type element for use in knitting machines. The latch is externally mounted to avoid manufacturing and operational problems experienced with conventional slot mounted latched knitting machine elements.

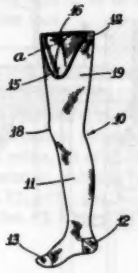
3,728,875

STOCKING WITH SOFT INNER THIGH AREA

Edward G. Hartigan, Schaumburg; Donald Patience, Barrington, both of Ill., and Herbert Knohl, Seneca, S.C., assignors to The Kendall Company, Walpole, Mass.

Filed Jan. 7, 1971, Ser. No. 104,699
Int. Cl. D04b 9/52, 9/54
U.S. Cl. 66—172 E 6 Claims

A full length stocking of knitted fabric including an elastomer-containing yarn which exerts a compressive effect on that portion of the leg covered by the stocking boot. In contrast to a typical stocking of this type which has an attached garter band of elastic webbing encircling the upper thigh, a stocking is disclosed in which that portion of the garter band



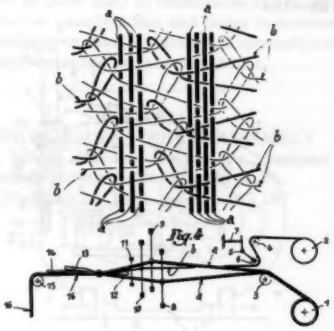
which covers the plexus of deep and superficial blood vessels in the inner thigh is replaced with a soft fabric such as that in the stocking boot.

3,728,876

WARP KNITTED FABRIC

Jean Etienne Marie Richard, Saint-Etienne (Loire), and Louis Antoine Etienne Jean Richard, Saint-Genest-Lerpt (Loire), both of France

Filed July 13, 1970, Ser. No. 54,125
Claims priority, application France, July 11, 1969, 6922898
Int. Cl. D04b 23/00
U.S. Cl. 66—192 2 Claims



A textile fabric which consists of a warp knitted fabric having additional warp threads woven therein with the underlaps of the warp knitted fabric acting as the weft for said additional warp threads.

3,728,877

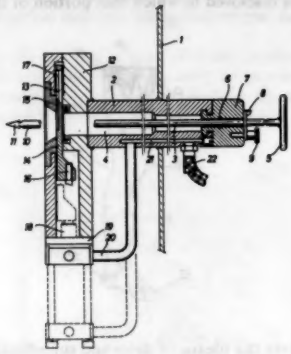
SAMPLING APPARATUS FOR HIGH PRESSURE HANK DYEING MACHINES

Leon von Ondarza, Gerhard-Hauptmannstr. 13, 5144 Wegberg, Germany

Filed Oct. 29, 1971, Ser. No. 193,769
Claims priority, application Germany, May 18, 1971, P 21 24 681.1
Int. Cl. D06f 29/00
U.S. Cl. 68—13 R 8 Claims

An apparatus for the extraction of test samples from the dyeing vessel of a high pressure hank dyeing machine without the necessity of cooling or de-pressurizing this vessel, comprises a unitary assembly of a mechanical or suction gripper

device and a cutter to sever the strands retracted by the gripper device from a hank stationary in the vessel. The cutter



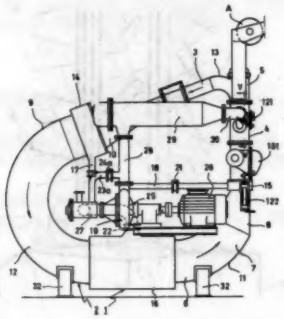
may serve as a pressure seal between the interior of the vessel and a tubular housing of the gripper device serving to receive the cut strands.

3,728,878

AUTOMATIC REVERSAL DEVICE FOR TEXTILE WET TREATMENT APPARATUS

Isidro Folch Trullas, Tarrasa, Spain, assignor to Argelich Termes y Cª, Tarrasa, Spain

Filed Dec. 20, 1971, Ser. No. 209,830
Claims priority, application Spain, June 16, 1971, 392,299
Int. Cl. B05c *3/172, 11/00*
U.S. Cl. 68—184 **8 Claims**



An automatic device which reverses the circulation direction of a cloth in rope form in a textile wet treatment vessel in which the cloth in rope form passes between two rollers which rotate by the friction thereagainst of the cloth and apply their rotation to a dynamo having its shaft in common with one of the rollers; the current generated by the dynamo is controlled by a voltmeter which, at certain values thereof, makes an electrical circuit, through a timed relay, having two solenoid valves, one of which drives the liquid inflow control valves for the jet means while the other separates the rollers, leaving the cloth to run freely therebetween.

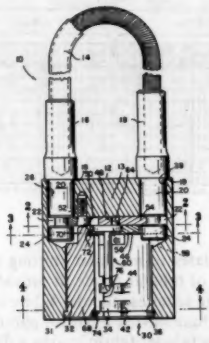
3,728,879

HEAVY CABLE SHACKLE PADLOCK

Walter E. Best, Indianapolis, Ind., assignor to Best Lock Corporation, Indianapolis, Ind.

Filed Feb. 8, 1971, Ser. No. 113,358
Int. Cl. E05b *67/22*
U.S. Cl. 70—38 R **9 Claims**

A padlock having a heavy cable shackle of selected length, constructed to provide good lock security. Identical long cable end pieces are received in parallel bores in a pad lock case and extend into a lock cavity formed by three overlapping parallel bores. The shackle-heel end piece is rotatably fixed in its bore by a heel plate engaged in a retaining groove of the piece and secured against the cavity end wall by a taper-head screw on the axis of one of the cavity bores. The shackle toe end piece is releasably dead-locked in its bore by a toe tumbler or bolt en-



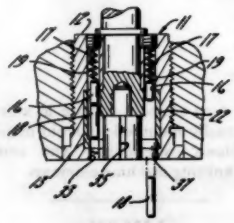
gaged in a retaining groove of the piece and slidably held against the cavity end wall by a retaining plate, which carries a throw assembly rotatable on the axis of the central cavity bore. The retaining plate has one end engaged in a supporting groove in the case and is supported at the other end, and held in the groove, by a plug rotatably locked in one cavity bore and held against removal by an 8-shaped key-actuated lock core received in the other two cavity bores.

3,728,880

REKEYABLE AXIAL PIN TUMBLER LOCK

Sidney Falk, Chicago, Ill., assignor to Fort Lock Corporation, Chicago, Ill.

Filed Feb. 10, 1972, Ser. No. 225,164
Int. Cl. E05b *27/08*
U.S. Cl. 70—363 **9 Claims**



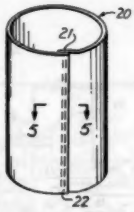
An axial pin tumbler lock is provided with means for rekeying the lock without disassembling the lock. Means are provided for removing an old master key from the lock at a rekeying position, and groove means are included which expose a locking pin for removal. A new pin of differing length can be inserted in the lock and the lock re-locked by a new master key. Service keys are also provided which cannot be used to rekey the lock.

3,728,881

METHOD AND APPARATUS FOR JOINING SHEET METAL, AND SHEET METAL JOINTS

Vernon W. Coop, Pico Rivera, Calif., assignor to Brazil H. Sugden, Bell Gardens, Calif.

Filed Jan. 18, 1971, Ser. No. 107,256
Int. Cl. B21d 39/02; B23p 23/00
U.S. Cl. 72—52 12 Claims



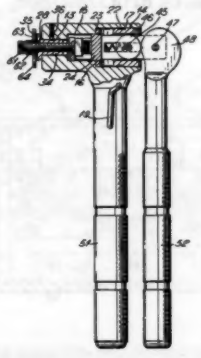
A first slit aperture means is formed in a first sheet metal portion and first protruding leg means is formed from the excess metal from the first slit aperture means. A second slit aperture means is formed in a second sheet metal portion and second protruding leg means is formed from the excess metal from the second slit aperture means. The sheet metal portions are then positioned so that a surface of the second sheet metal portion is contiguous to a surface of the first sheet metal portion and so that the second leg means extends through the first slit aperture means. The leg means are then crimped to sandwich the second leg means between the first leg means and a surface of the first sheet metal portion and to sandwich a portion of the first sheet metal portion between the second leg means and a surface of the second sheet metal portion to form the completed joint.

3,728,882

TOOL FOR PLACING THREADED INSERTS

Robert M. Rigot, Granada Hills, and Douglas B. Goettlings, Santa Susana, both of Calif., assignors to Aerpat A.G., Zug, Switzerland

Filed Aug. 30, 1971, Ser. No. 176,199
Int. Cl. B21j 15/04
U.S. Cl. 72—114 14 Claims



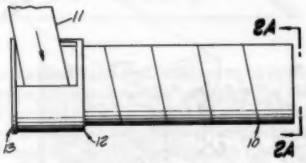
A tool for placing threaded inserts, of the type comprising a threaded first part which is pulled towards a second part to place the insert, has a generally tubular body integral with a radially extending body handle. A rotatable sleeve within the rear part of the body carries a reciprocable and rotatable shaft, to the forward end of which is connected a screw which protrudes through an annular anvil. The rear of the shaft carries a rotatable cam which is integral with a radially extending cam handle and bears against a roller mounted in the sleeve. The cam handle can be used both to rotate the shaft and screw, and to rotate the cam so as to retract the screw with respect to the body of the tool.

3,728,883

SUPPORT APPARATUS FOR LARGE DIAMETER THIN-WALL METAL CYLINDERS

Homer C. Lamborn, Glendora; Palmer C. Gallup, Monrovia, and Paul W. Kao, Covina, all of Calif., assignors to United Concrete Pipe Corporation, Baldwin Park, Calif.

Filed Feb. 12, 1971, Ser. No. 115,011
Int. Cl. B21f 3/04
U.S. Cl. 72—142 18 Claims



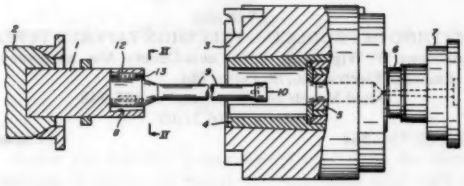
A support assembly is disclosed for providing internal support during fabrication of thin-walled large diameter metal cylinders such as those used as membranes in concrete pipe. Such cylinders are usually 5 feet and larger in diameter. The support assembly comprises a plurality of internally mounted wheel assemblies attached to a common frame.

3,728,884

HIGH PRESSURE TOOLING ASSEMBLY

Pasquale A. Santoli, Natrona Heights, Pa., assignor to Allegheny Ludlum Industries Inc., Pittsburgh, Pa.

Filed July 16, 1971, Ser. No. 163,187
Int. Cl. B21c 25/00
U.S. Cl. 72—273 4 Claims



A stem holder that is moved back and forth has an axial socket in its front end that has a side wall circular in cross section and converging toward the front end of the holder. Disposed in the socket in engagement with its inner end wall is a stem that extends forward from the holder. The portion of the stem in the socket is cylindrical and spaced from the socket side wall. In this space there are at least three wedges that are curved transversely to fit against the stem and encircling wall. Each wedge has a threaded longitudinal passage through it, in which is mounted a screw that projects from the opposite ends of the wedge. The inner ends of the screws en-

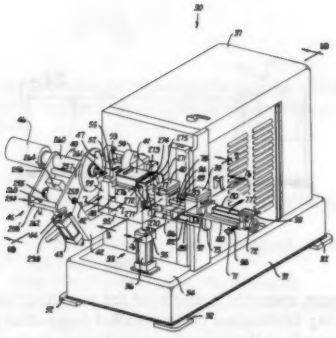
gage the inner end of the socket, and the outer ends of the screws are formed for turning them so that the wedges can be adjusted along the stem to adjust it laterally in the socket in order to align it with the member with which it cooperates.

3,728,885

TUBE BENDING AND SAWING APPARATUS

Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Filed Dec. 11, 1970, Ser. No. 97,253
Int. Cl. B21d *43/28*
U.S. Cl. 72—294 **12 Claims**



An apparatus for bending and/or sawing tubes to a desired configuration. Tube guides route continuous lengths of tubing to a clamp unit, a feed unit and a bend clamp. The feed unit is slidable on rails for pulling the desired tube lengths through the clamp unit where they are then held in place by the clamp unit and bend clamp. A mandrel and wiper block is engageable with the ends of the tubes and is rotatable about a bend block for bending the tubes to the desired configuration. A circular saw cuts the configured tubes from the continuous lengths of tubing. Stripper rods force the cut tubes from the apparatus.

3,728,886

METHOD OF PRODUCING PRECISION TAPERED TUBES

Lawrance W. Wightman, Saint Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed March 24, 1971, Ser. No. 127,448
Int. Cl. B21d *31/00*
U.S. Cl. 72—364 **5 Claims**

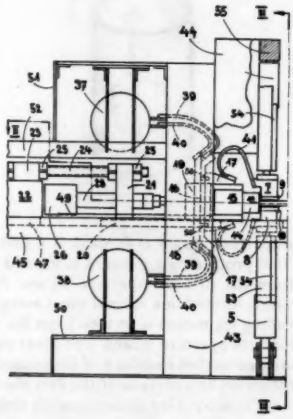
A tapered metal tube is formed slightly undersize, stretched over a mandrel of precisely finished size, annealed on the mandrel and cooled, then again heated while the mandrel is cooled to facilitate removal.

3,728,887

ELECTRIC UPSETTING MACHINE

Horst Bachmann, Einberg, near Coburg, Germany, assignor to Langenstein & Schemann Aktiengesellschaft, Coburg, Germany

Filed Jan. 6, 1971, Ser. No. 104,233
Int. Cl. B21j *5/08*
U.S. Cl. 72—318 **15 Claims**



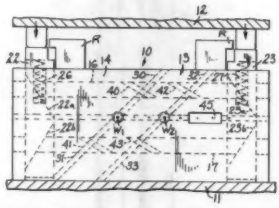
An electric upsetting machine comprising an upsetting device, a pair of clamping electrodes, an anvil electrode and a transformer, the clamping electrodes being arranged in at least two adjacent pairs arranged to operate in parallel.

3,728,888

APPARATUS AND METHOD FOR CUTTING AND FORMING OBJECTS

Alfred E. Motzer, Meriden, Conn., assignor to Hobson and Motzer, Wallingford, Conn.

Filed Feb. 23, 1971, Ser. No. 117,942
Int. Cl. B21d *31/02, 7/06*
U.S. Cl. 72—325 **8 Claims**



A die assembly for cutting and forming the ends of wire stock comprising a pair of panel slides movable in opposite directions and each operating a diagonally guided cutting and forming tool which simultaneously move toward and away from each other on opposite sides of the work. Also disclosed is a method of providing a four-sided pyramidal point on rectangular wire stock.

3,728,889

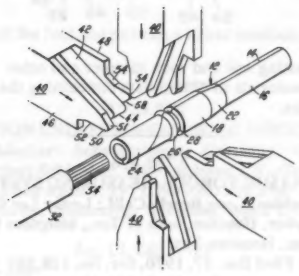
CRIMPING DEVICE

William McIver, West Monroe, La., and William R. Mattingly, Santa Ana, Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 845,835, July 29, 1969, Pat. No. 3,626,363. This application Aug. 23, 1971, Ser. No. 176,416

Int. Cl. B21d 9/08

U.S. Cl. 72—402 3 Claims



Crimping indentors are provided to secure a wire to a roll formed contact having a terminal portion with a spiral seam therealong. Each crimping indentor is formed with a crimping end portion and a pair of positioning members.

3,728,890

APPARATUS FOR DRAW FORGING

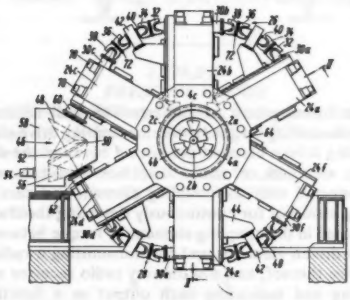
Friedrich Kocks; Ablert Quambusch, and Bernhard Terdenge, all of c/o Friedrich Kocks, Freiligrathstrasse, 4 Dusseldorf, Germany

Filed Feb. 12, 1971, Ser. No. 114,966

Claims priority, application Germany, Feb. 21, 1970, P 20 08 081.3

Int. Cl. B21j 13/02

U.S. Cl. 72—406 14 Claims



A draw forging apparatus and method are provided in which six swinging jaws are arranged equi-angularly at 60° to one another around the run-through axis of a work piece to be draw forged, each of which jaws depends from eccentric drives. The jaws are reciprocable in the feed direction by an additional drive. The drives are so interconnected that each three of the jaws offset by 120° relative to one another carry out simultaneous movements in the same direction and operate in antiphase with respect to the other three jaws.

3,728,891

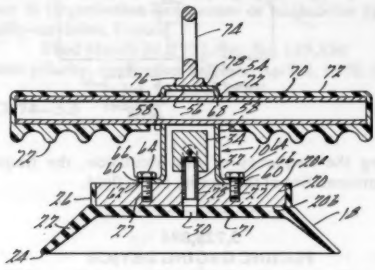
VACUUM CUP

Bertie Forrest Hall, Jr., Berkley, Mich., assignor to Raymond P. Wolgast, Berkley, Mich.

Filed Oct. 7, 1970, Ser. No. 78,848

Int. Cl. B21d 1/12

U.S. Cl. 72—465 10 Claims



A suction cupped hand tool, adapted to be retained to an indented portion of an automobile body panel or the like for the purpose of restoration thereof, and having means for applying an outward drawing force. A novel saddle bracket is interposed between the suction cup and the drawing means and provides a protective shield over a special venturi evacuator jet; the evacuator jet operates from a standard shop air supply and provides the means of inducing a vacuum within the suction cup for firmly gripping the surface of the body panel thereto.

3,728,892

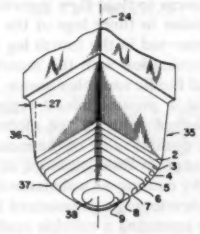
BALLISTIC SHAPE PUNCH AND SCREW HEAD SOCKET

Allan Sangster, Hamilton, Ontario, Canada, assignor to The Steel Company of Canada, Limited, Hamilton, Ontario, Canada

Division of Ser. No. 768,863, Oct. 18, 1968. This application Sept. 15, 1971, Ser. No. 180,713

Int. Cl. B21c 3/16; B21k 1/44

U.S. Cl. 72—476 4 Claims



Punch for forming square socket type head for screw fasteners in which the socket has four equal sides each of which has an upper slightly inwardly inclined flat portion which merges without discontinuity at its lower end with a lower concave bottom portion.

3,728,893

DEVICE FOR MEASURING THE DENSITY OF A FLUID

Sylvain Janssen, Neuilly, Hauts-de-Seine, France, assignor to Compagnie Des Compteurs, Paris, France

Filed April 5, 1971, Ser. No. 131,016

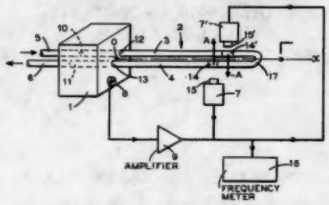
Claims priority, application France, April 6, 1970, 7012318

Int. Cl. G01n 9/02

U.S. Cl. 73—32 6 Claims

Disclosed device includes a fluid conveying, U-shaped tube having its end portions secured to a base member. Means are

provided in the proximity of the U-shaped end portion of the tube for establishing a torsional oscillation of the tube and for measuring the frequency of this oscillation, the frequency being representative of the density of the fluid.



3,728,894

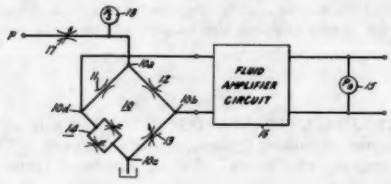
FLUIDIC GAGING DEVICE

HansJoerg Stern, Scotia, N.Y., assignor to General Electric Company

Continuation of Ser. No. 800,623, Feb. 19, 1969, abandoned. This application April 2, 1971, Ser. No. 130,635

Int. Cl. G01b *13/04*

U.S. Cl. 73—37.5 **35 Claims**



A fluidic gage having no moving mechanical parts is utilized for continuous monitoring of a particular parameter such as wire diameter, sliver density and object proximity. The gage comprises a bridge circuit including a pair of fluidic resistors having fixed resistances to fluid flow therethrough and a first fluidic variable resistor in three legs of the bridge circuit. A sensing head is connected in the fourth leg of the bridge circuit in fluid communication with the monitored material to function as a second fluidic variable resistor. The first variable resistor is preset to a predetermined resistance value corresponding to a desired value of the monitored parameter. Deviation from the desired value of the monitored parameter causes a linear change in fluid pressure at the input to the sensing head thereby causing an unbalanced condition of the bridge circuit and developing a pressurized fluid signal which may be utilized for operating a suitable readout device or initiating a control action.

3,728,895

TRIAXIAL COMPRESSION TEST APPARATUS

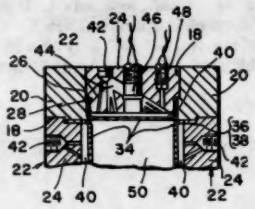
Garrett D. Shaw, Rolling Hills, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Dec. 18, 1970, Ser. No. 99,356

Int. Cl. G01n *3/08*

U.S. Cl. 73—94 **1 Claim**

A high-speed triaxial compression test apparatus having a hollow rectangular frame with a central rectangular test cavity for containing a test sample and a rectangular opening to the test cavity in each side of the frame containing a removable pressurizing module having an inner movable pressure wall, such as a flexible diaphragm, which is pressurized through an inlet port in the module to exert a compression load on the test sample along the respective cavity axes, and transducers for generating signals representing the pressure on and displacement of the pressure wall. The primary application of the apparatus is testing soil and rock samples and other natural and fabricated materials to obtain data concerning their mechanical properties.



3,728,896

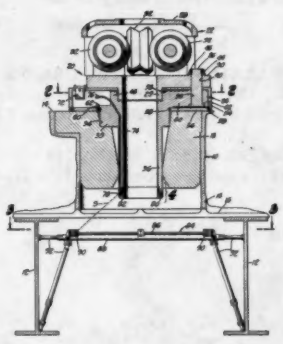
DYNAMIC TORQUE MEASURING SYSTEM

Loren B. Sheldon, Long Beach, Calif.; Lester Lee Cain, Ethell, and J. Dower, Houston, both of Tex., assignors to Drill-Au-Mation Inc., Houston, Tex.

Filed Dec. 17, 1970, Ser. No. 128,597

Int. Cl. G01l *3/10*

U.S. Cl. 73—136 **26 Claims**



A system forming part of subterranean well drilling apparatus for measuring torque between a rotating drive element and a rotating driven element connected between the driving and driven elements, a strain detection and transmitting system connected with the coupling element and carried by the rotating elements for continuously detecting the transient strains imposed in the coupling element by torque between the driving and driven elements and for transmitting a radio output indicative thereof, and a stationary radio receiver system for receiving and indicating such output as a function of torque and torque variations between the driving and driven elements.

3,728,897

COMPENSATED FUEL GAGE

Irwin Wallman, Great Neck, N.Y., assignor to Consolidated Airborne Systems, Inc., Carle Place, L.I., N.Y.

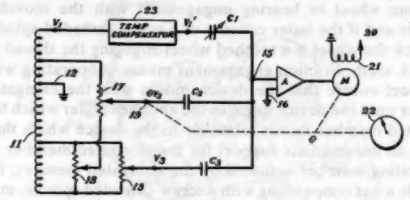
Filed Nov. 16, 1970, Ser. No. 89,681

Int. Cl. G01f *23/26*

U.S. Cl. 73—304 C **10 Claims**

A temperature sensing element responsive to the temperature of the fuel in a tank is connected in one part of the bridge

circuit of a capacitance fuel gage. The temperature sensing element compensates for variations in the dielectric constant



and density of the fuel and permits a linear readout of the mass of the fuel.

3,728,898

ACTION UNIT FOR MEASURING DEVICES

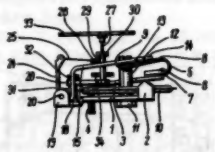
Herbert Schlenker, Schwenningen, Germany, assignor to Firma Herbert Schlenker, Schwenningen a.N., Germany

Filed April 1, 1971, Ser. No. 130,274

Claims priority, application Germany, April 1, 1970, P 20 15 449.8

Int. Cl. G01l 7/12

U.S. Cl. 73—386 **7 Claims**



An action unit for a measuring device such as an aneroid barometer incorporates a U-shaped blade spring one limb of which is fixed to an adjustable support while the other limb, which is longer than the first limb, provides a bearing surface for an intermediate member engaged by an actuator pin of the measuring device. The actuator pin is disposed between the yoke and the terminal edge of the longer limb of the blade spring and the intermediate member bears on said terminal edge and on points between said edge and the yoke, and said intermediate member is extended to provide means for actuating an indicator through a movement-amplifying linkage system.

3,728,899

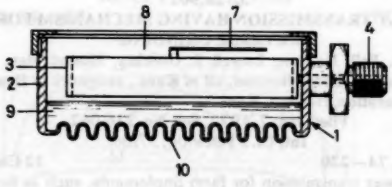
PRESSURE GAUGE

Leendert Frederik Willem Dijkema, Rotterdam, Netherlands, assignor to Heineken Brouwerijen N.V., Amsterdam, Netherlands

Filed Feb. 17, 1972, Ser. No. 227,081

Int. Cl. G01l 19/04, 7/04

U.S. Cl. 73—393 **6 Claims**



In a pressure gauge of the Bourdon type wherein the gas pressure to be measured is compared with a reference pressure, the reference pressure being provided by a saturated vapor pressure, which liquid shows at least substantially the same characteristic under the influence of temperature and atmospheric pressure variations as the gas to be gauged.

3,728,900

UNIVERSAL NUTATION DAMPER

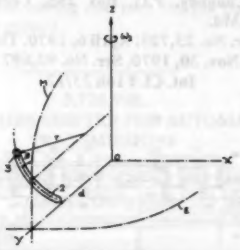
Uwe K. Engelking, Domeinweg Noordwijk, Netherlands, assignor to Organisation Europeenne de Recherches Spatiales, Neuilly-sur-Seine, France

Filed March 30, 1971, Ser. No. 129,330

Claims priority, application Belgium, April 2, 1970, 87299

Int. Cl. B64c 17/02

U.S. Cl. 74—5.5 **5 Claims**



A stabilization device to keep the nutation of a gyroscopic system, e.g., a spinning spacecraft or space vehicle, comprising an arcuate guide, a gas, liquid and/or solid component contained in said guide and adapted to move therein while dissipating energy, said movement being in a plane making an acute angle with the spin axis of said gyroscopic system.

3,728,901

APPARATUS FOR REVERSING THE TRAVERSE OF THE CAM CARRIAGE OF AN AUTOMATICALLY OPERATING FLAT KNITTING MACHINE

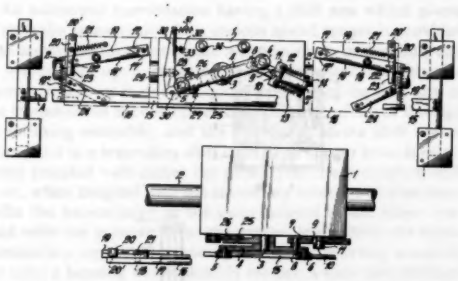
Karl Essig, 7410 Reutlingen, Germany, assignor to H. Stoll & Company, Stollweg, Germany

Filed Aug. 26, 1971, Ser. No. 175,169

Claims priority, application Germany, Aug. 27, 1970, P 20 42 500.7

Int. Cl. F16h 21/16

U.S. Cl. 74—27 **12 Claims**



A changeover device for a flat knitting machine of the type wherein the carriage is reciprocated through a traverse type gear casing having roll ring gearing for converting rotary movement into linear displacement has a double-armed changeover lever pivotally mounted on the gear casing so as to vary the orientation of the roll ring gearing members therein. The lever is provided with rollers at its ends, and one or the other of these rollers is pressed against a longitudinally extending abutment rail during traverse of the casing and carriage. An inclined braking bar is disposed at each end of the traverse path for encountering an approaching roller to thereby pivot

the changeover lever in the sense to bring about a continuing reduction in speed of traverse. A thrust device is released shortly before the carriage comes to rest, and thrusts the changeover lever beyond its dead center position to reverse the carriage traverse. The abutment rail is adjustable to vary the angular setting of the changeover lever, and hence the traverse speed. The braking bars are longitudinally adjustable, and means are provided for biasing the changeover lever oppositely to its pivotal movement until it reaches a predetermined distance beyond its dead center position so as to ensure continued traverse in the same direction after the lever is moved to dead center to stop the traverse.

3,728,902

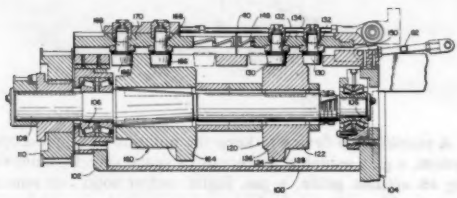
HIGH SPEED TRANSFER DRIVE

Stuart H. McCaughey, P.O. Box 255, Cockeysville Road, Cockeysville, Md.

Division of Ser. No. 25,725, April 6, 1970. This application Nov. 30, 1970, Ser. No. 93,697

Int. Cl. F16h *25/12*

U.S. Cl. 74—56 **2 Claims**



A cam flange extends radially outward from a cylindrical body, and followers are mounted on opposite sides of the flange for continuous uniform direction rotation of the followers as the cam rotates, and the followers move slides.

3,728,903

DEVICE FOR SUPPORTING AN ELONGATED MOVABLE MEMBER

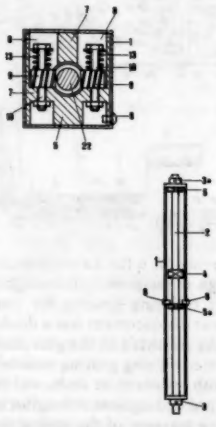
Richard Haller, Ueberlandstr. 240, Dubendorf, Switzerland

Filed Jan. 18, 1971, Ser. No. 107,030

Claims priority, application Switzerland, Jan. 16, 1970, 610/70

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **7 Claims**



An elongated movable member which may form part of a linear actuator is supported intermediately by means of support devices which are adapted to move to a limited extent with the elongated member and thereafter to be held fixed by stationary abutment means. Each support device includes at least one wheel in bearing engagement with the movable member and if the latter consists of a screw-threaded spindle or a rack the wheel is a toothed wheel engaging the thread or the rack teeth. Friction engagement means cooperating with the wheel ensure that the device moves with the elongated member until the device engages the abutment after which the elongated member moves relatively to the device which then acts as an intermediate support for the elongated member. A cooperating member actuated by the elongated member, for example a nut cooperating with a screw-threaded spindle, may be arranged with recesses to clear the abutment means which engage the support device.

3,728,904

ELECTRICAL WINDOW REGULATOR MECHANISM

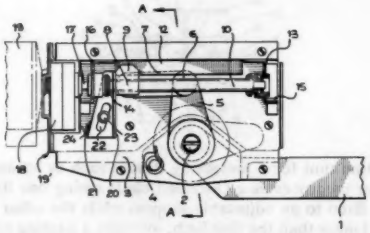
Paul Boyriven, Paris, France, assignor to Compagnie Industrielle De Mecanismes, Courbevoie, France

Filed Feb. 17, 1971, Ser. No. 116,099

Claims priority, application France, Feb. 24, 1970, 7006551; July 6, 1970, 7024906

Int. Cl. F16h *27/02*

U.S. Cl. 74—89.15 **7 Claims**



A device for moving an actuating arm comprising a plate upon which the actuating arm is mounted for rotation through a predetermined angle and a threaded shaft also rotatably mounted on such plate. Means are provided for connecting the output shaft of an electric motor to the thread shaft. A slide is mounted parallel to the threaded shaft and a nut is immobilized in rotation by the slide and adapted to move longitudinally of the threaded shaft upon rotation of the threaded shaft. A first lever is secured to the axis of the operating arm and a second lever is pivotally connected at one end to the first lever and at its other end to the nut, whereby movement of the nut due to rotation of the threaded shaft will cause the first lever to rotate the second lever and thus the operating arm.

3,728,905

BELT TRANSMISSION HAVING MECHANISM FOR REVERSE GRINDING

Ferol S. Fell, Newton; Lowell J. Goering, Moundridge, and William D. Long, Hesston, all of Kans., assignors to Hesston Corporation, Hesston, Kans.

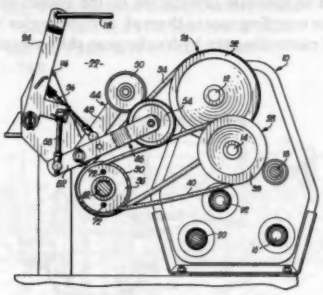
Filed Jan. 7, 1972, Ser. No. 216,062

Int. Cl. F16h *9/04, 37/06*

U.S. Cl. 74—220 **12 Claims**

A power transmission for farm implements, such as forage harvesters, having a rotor provided with chopping blades, is operable to drive the rotor in reverse during sharpening of the blades. A pair of belt and pulley assemblies are normally driven alternately to effect either forward or reverse rotation

of one or more output shafts. Upon the removal of shear or break pins, installation of a stud and substitution of one link



for another, a direct drive of the rotor from a power shaft is released and the rotor is reversed by operation of both assemblies simultaneously.

3,728,906

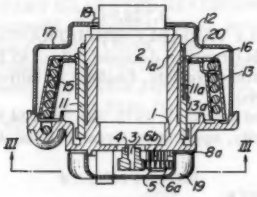
ELECTRICALLY-OPERATED EXTENDING AND CONTRACTING ANTENNA FOR RUNNING AUTOMOBILES

Nobuyoshi Takaki, Aichi-ken, and Tadashi Hattori, Kariya, both of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Dec. 7, 1970, Ser. No. 95,703

Int. Cl. F16h *1/20;* **H01q** *1/12, 1/32*

U.S. Cl. 74—421 R **1 Claim**



An electrically-operated extending and contracting antenna which employs, instead of a reduction worm gear, a plurality of stages of reduction spur gears superior in gear engagement efficiency for transmitting power from a motor to a rotary drum, so that the loss of driving power in the reduction gear is remarkably reduced, thereby making it possible to employ an electric motor which is small in both power and size.

3,728,907

WORM DRIVE

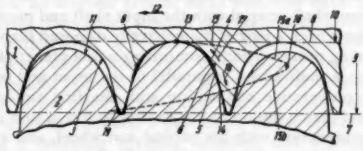
Gerhard Stade, Berlin, Germany, assignor to Herbert Lindner GmbH, Berlin, Germany

Filed Dec. 8, 1971, Ser. No. 206,092

Claims priority, application Germany, Jan. 15, 1971, P 21 03 537.0

Int. Cl. F16h *1/16, 55/04*

U.S. Cl. 74—425 **11 Claims**



A worm drive includes a cylindrical worm and a worm gear, having arcuated corresponding engaging tooth flank profiles, with a mesh or contact line in the engaging region. The flanks of the teeth of the worm gear each consist of at least two flank parts engaging with the flanks of the worm gear teeth. One flank part, in the axial section through the worm, has a profile inclined relative to a perpendicular to the worm axis and which profile may be rectilinear, slightly convex, or slightly concave. The other flank part, in the axial section through the worm, has a sharply curved profile. The mesh or contact line reverses in the engaging region. The flank part having the sharply curved profile may be convex toward the worm gear or may be concave toward the worm gear. Alternatively, the flank part having the sharply curved profile may include a part convex toward the worm gear, a part concave toward the worm gear, and a substantially rectilinear part interconnecting the convex and concave parts. As a modification, the profile of the worm, in the axial section through the worm, may comprise a single curve having one part sharply curved and the other part slightly curved.

3,728,908

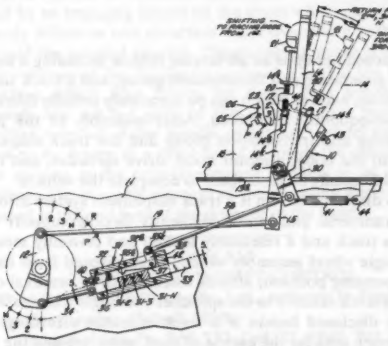
DUAL-MODE SHIFTER FOR AUTOMATIC TRANSMISSIONS

William J. Bieber, R.D. No. 1, Pipersville, Pa.

Filed Nov. 3, 1971, Ser. No. 195,149

Int. Cl. G05g *7/08*

U.S. Cl. 74—473 R **18 Claims**



An automatic transmission having a shift arm which pivots to shift the transmission into various speed ranges is provided with apparatus for pivoting the arm accurately and rapidly and in increments upon repeated sequential displacement of a master shift lever in one direction. One end of the shift arm of the transmission is connected to a primary shift lever through an indexing assembly, and the other end of the shift arm is connected to a secondary shift lever. The master lever is selectively coupled with either the primary or the secondary shift lever; when coupled with the secondary lever the master lever shifts the transmission in the conventional mode; when coupled with the primary lever the master lever shifts the transmission in a rapid shift or racing mode. The indexing assembly includes a housing which slidably mounts a slide element connected to the shift arm and a pawl mounted in a carriage which slides alongside the slide element for gripping the slide element and displacing it longitudinally to pivot the arm. The pawl is connected through linkage to the primary lever and sequentially engages recesses in the slide element to move with the slide and carriage predetermined distances when the master lever is pivoted in one direction. Stop means is provided in the housing to arrest movement of the slide element upon completion of a shift. The master lever is normally biased into an initial position by means of a spring which also operates to disengage the pawl from the slide element in preparation for a succeeding shift.

3,728,909

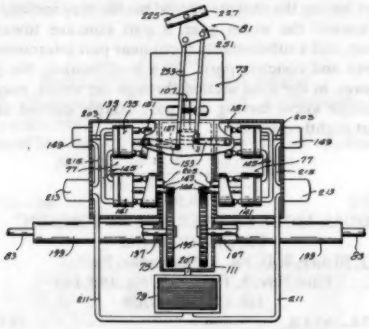
ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 857,494, Sept. 12, 1969. This application Nov. 27, 1970, Ser. No. 93,476

Int. Cl. G05g 9/00

U.S. Cl. 74—491 6 Claims



Disclosed herein is an all-terrain vehicle including a body, a power generating and transmission group, and a track suspension group, each of which can be separately initially fabricated and subsequently assembled. After assembly of the power generating and transmission group and the track suspension group to the body, a motor hood, drive sprocket, and tracks may additionally be assembled to complete the vehicle.

Also disclosed herein is a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

Also disclosed herein is a track sprocket affording maximum open area for the escape of mud, snow, ice and the like.

Also disclosed herein is a hydrostatic transmission including a control having a reverse lock-out preventing accidental movement of the control into position effecting reverse operation.

Still further, there is disclosed herein a hydraulic oil circulating system which utilizes the gear box as a sump for the circulating system and which is in heat exchanging relation with an air circulating system.

3,728,910

CONTROL DEVICES OF EPICYCLIC GEAR TRANSMISSIONS

Jean Piret, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, both of France

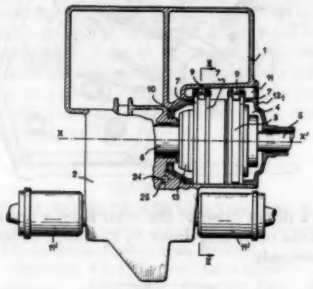
Filed March 31, 1971, Ser. No. 129,713

Claims priority, application France, April 3, 1970, 7012137

Int. Cl. E16h 37/08; G05g 7/16

U.S. Cl. 74—695 7 Claims

This control system is intended for an epicyclic gear train change-speed transmission mechanism comprising at least one main casing and in said casing hydraulic piston-controlled coupling means co-acting with clamping members provided with radial extensions receiving the antagonistic stress from resilient means. This mechanism has said clamping members disposed at unequal intervals along their periphery and received in notches formed in the main casing of the change-speed transmission mechanism, whereby the resultant of the efforts exerted by said resilient means is applied in the direction of the axis of rotation of the planet gear elements and of the coupling means thereof, at right angles to the axis of the shaft controlling the hydraulic gear-shift means lying at the lower portion of the main casing of the change-speed transmission mechanism. This control system and transmission mechanism are applicable to advantage mainly to motor vehicles transmissions, and more particularly to transverse-mounted power and transmission units.



3,728,911

INFINITELY VARIABLE SPEED TRANSMISSIONS

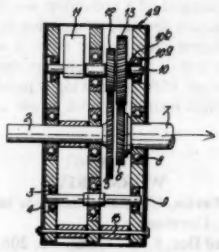
William Francis Granville, deceased, late of 85 Howdale Road, Dowham Market, Norfolk, England (Winifred Mary Granville, executrix)

Filed March 17, 1971, Ser. No. 124,904

Claims priority, application Great Britain, Aug. 13, 1970, 39,131/70

Int. Cl. F16h 3/74

U.S. Cl. 74—752 F 10 Claims



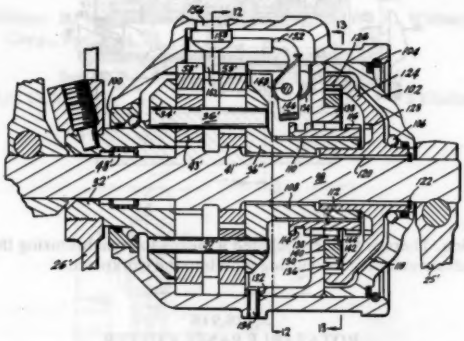
The invention relates to an infinitely variable speed transmission comprising an input shaft mounting a first sun wheel and an output shaft coaxial with the input shaft and mounting a second sun wheel, a pair of diametrically disposed planet assemblies being provided each comprising a first planet pinion, mounted on a shaft which is parallel to the input and output shafts, in co-operative connection with the first sun-wheel, and a second planet pinion on the shaft which is in turn in co-operative connection with the second sun wheel, and a centrifugal fly-weight mounted on the shaft, the two centrifugal fly-weights of each assembly being oppositely disposed so that on rotation of the input shaft a drive comprising of only positive impulses is imposed on the output shaft.

3,728,912

BICYCLE TRANSMISSION

Rex C. Darnell, 8960 Jackson Road, Dexter, Mich.

Filed Nov. 9, 1970, Ser. No. 87,838
Int. Cl. F16h *57/10, 5/36;* B62m *11/14*
U.S. Cl. 74—769 4 Claims



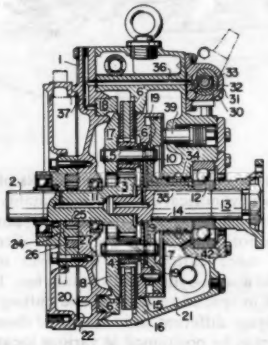
A bicycle ratio changing transmission of improved efficiency and cost of construction disposed within the crank hanger housing and characterized by the use of a minimum of inexpensive, sturdy components.

3,728,913

PLANETARY GEAR TYPE REVERSING DEVICE

Michisuke Nagasaki, Toyonaka, Japan, assignor to Yanmar Diesel Engine Co., Ltd., Osaka, Japan

Filed May 25, 1971, Ser. No. 146,699
Claims priority, application Japan, June 2, 1970, 45/55206
Int. Cl. F16h *3/46, 57/10*
U.S. Cl. 74—785 3 Claims



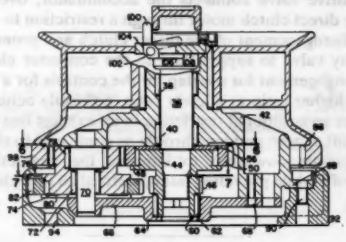
A reversing device of planetary gear type for marine engines and the like comprising a sun gear mounted on an input shaft, a plurality of inner planet gears in mesh with the sun gear, a plurality of outer planet gears in mesh with said inner planet gears, an internal gear in mesh with said outer planet gears, bearing discs which support said inner and outer planet gears, an output shaft to which one of said bearing discs is fixedly secured, said internal gear being slidably supported only by the planet gears so as to be gripped either between an extension of the other bearing disc and a normal-running pressing member or between a protrusion of the reversing gear case and a reversing pressing member, and a hydraulic piston which is adapted to move into and out of the reversing gear case to attain pressure contact with a side of one of the bearing discs to avoid unintended rotation of the output shaft while the device is in the neutral position.

3,728,914

THREE SPEED DECK WINCH

Jesus Guangorena, Atherton, and Edward Kaila, Sunnyvale, both of Calif., assignors to Barient Company, San Carlos, Calif.

Filed Dec. 29, 1970, Ser. No. 102,293
Int. Cl. F16h *5/72;* B66d *1/24*
U.S. Cl. 74—812 16 Claims



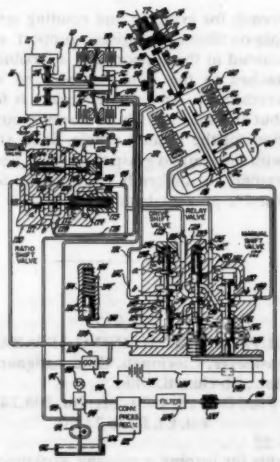
A winch particularly adapted for hauling lines on a sailing craft which will provide three wind-up speeds of the drum for one speed applied to a central shaft by a winch handle or a segment wheel attached to the shaft. Internally, the winch has a gear train mechanism including two rachet gears that provide two different drum speeds when the handle or segment wheel is rotated in opposite directions. A first speed is provided by an engaging means on the drum which causes it to be directly driven in one direction while overriding both ratchet gears of the internal gearing. The engaging means is retracted by movement of the handle or segment wheel in the opposite direction which thus drives the drum at a second speed through one ratchet gear of the internal gear mechanism. Another reversal of the handle or segment wheel causes the drum to be driven at a third speed through the other ratchet gear as long as the engaging means remains in its retracted position. The movable element of the engaging means may be situated in the end face of the drum or in the handle.

3,728,915

TRANSMISSION SHIFT CONTROL

William B. Clark, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 869,732, Oct. 27, 1969, Pat. No. 3,602,344. This application April 23, 1971, Ser. No. 136,881
Int. Cl. B60k *21/00;* F16h *47/00*
U.S. Cl. 74—868 2 Claims



A transmission having a converter drive and a direct drive clutch in which the manual neutral and drive control valve

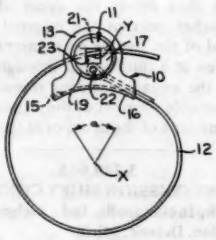
supplies fluid to engage the converter drive clutch and the governor actuated direct drive clutch valve supplies fluid through a restriction to engage the direct drive clutch and also to an accumulator pressure regulator to provide a gradual pressure rise in the direct drive clutch motor to a value that carries the load, and then actuates an overlap relay valve to exhaust the converter drive clutch motor for overlap independent of time. On a direct to converter shift, the downshifting direct drive valve connects the accumulator, overlap valve and the direct clutch motor through a restriction to exhaust to delay disengagement of the direct clutch and promptly shifts the relay valve to supply fluid to the converter clutch for a quick engagement for overlap. In the controls for a downshift from a higher ratio to a lower ratio, a throttle actuated valve provides an additional restriction in an exhaust line to delay a downshift at zero and low throttle as compared to the full and high throttle downshift to improve the character of the downshifts while providing fast upshifts at all throttle settings.

3,728,916

FLEXIBLE STRAP WRENCH

Jerry K. Brantley, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,515
Int. Cl. B25b *13/52*
U.S. Cl. 81—64 **5 Claims**



A strap wrench for grasping and rotating articles, such as cylindrical spin-on filters, comprises a support, a cam member rotatably mounted in the support and a flexible strap having one end attached to the cam member and a second end threaded therethrough. An arcuate surface is formed on the support to abut and substantially conform to outer cylindrical surface portions of the rotated article. Such arcuate surface cooperates with the strap to grasp the article, upon rotation of the cam member, to uniformly distribute a torquing force therearound and to prevent damage thereto.

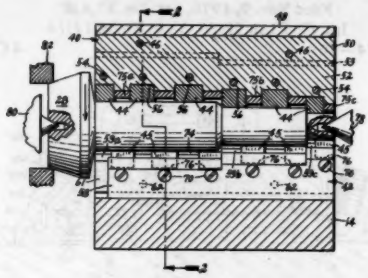
3,728,917

MULTI-PLUNGE TURNING APPARATUS

Carl W. Kaesemeyer, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Dec. 15, 1971, Ser. No. 208,248
Int. Cl. B23b *21/00*
U.S. Cl. 82—25 **2 Claims**

An apparatus for turning a rotating workpiece includes an improved turning apparatus. The improvement comprises a plurality of cutting tools radially spaced about the axis of rotation and secured to a support designed to align the tools in a manner that minimizes the forces present at the axis of rotation. There is further included a means for synchronizing the advancement of the cutting tools into the workpiece.

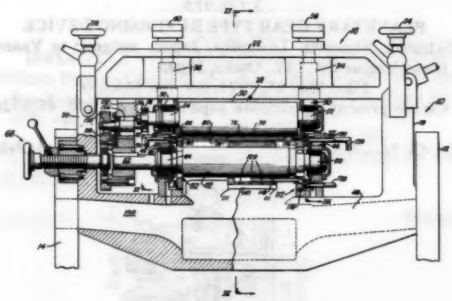


3,728,918

ROTATABLE PANEL CUTTER

Herbert W. Helm, Hollidaysburg, Pa., assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Nov. 9, 1970, Ser. No. 87,788
Int. Cl. B26d *7/18*
U.S. Cl. 83—22 **14 Claims**



Apparatus for cutting panels from blanks of sheet material that includes a cylindrical anvil roller rotatably supported on a bridge member. A die shaft is rotatably supported on a frame member and positioned below the anvil roller. The die shaft has one or more cutting dies or knives mounted on its periphery and a semi-cylindrical vacuum bar. The vacuum bar is positioned in spaced relation to the cutting dies and is arranged to engage different sized blanks of sheet material. The cutting dies may be positioned at various locations on the die shaft to simultaneously form panels of various sizes at various locations on the blank of sheet material. A first valve member is provided adjacent one end of the die shaft to impart a negative pressure or vacuum through longitudinal openings in the vacuum bar so that the blank of sheet material is engaged to the vacuum bar and conveyed between the dies and anvil roller positioned thereabove. A combination valve is secured adjacent the opposite end of the die shaft and is arranged to impart a negative pressure to the cutting dies while the panel is being severed from the blank and to apply a positive pressure and remove the panels severed from the blank. The anvil roller is arranged to rotate with the die shaft in the same direction as the die shaft or in a direction opposite to the direction of rotation of the die shaft. Other elements are provided to control the peripheral speed of the anvil roller and provide a differential rate of rotation between the anvil roller and the die shaft. The vacuum bar has a plurality of spaced

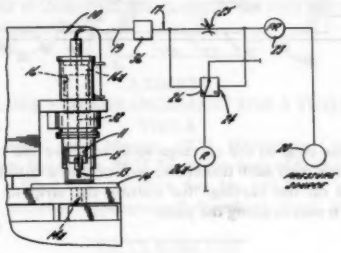
openings that are adapted to engage different sized blanks of sheet material. The openings not employed to engage a particular sized sheet are covered with a tape material during operation of the apparatus.

3,728,919

BROKEN TOOL DETECTOR

William B. Scott, Steward, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed Nov. 15, 1971, Ser. No. 198,689
Int. Cl. B26d 7/22; E21b 13/00; B23b 49/00
U.S. Cl. 83—62 5 Claims



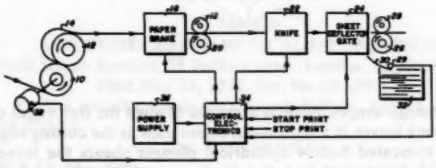
A portion of a pneumatic circuit for sensing the breakage of a punch is formed by a normally closed passageway in the punch itself. If the punch is broken, the passageway is opened up and pressurized air in the circuit is vented to the atmosphere through the passageway. A pressure differential switch in the circuit senses the resulting pressure change and, in response thereto, produces an electric signal to indicate breakage of the tool.

3,728,920

CUT AND DEFLECT WEB DRIVE APPARATUS

John F. Gardner, Penfield, N.Y., and Michael B. Parry, Chalfont St. Peter, England, assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 829,623, June 2, 1969, Pat. No. 3,591,279.
This application Jan. 26, 1971, Ser. No. 109,880
Int. Cl. B26d 5/20
U.S. Cl. 83—106 2 Claims



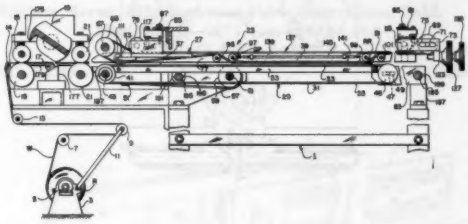
A cut and deflect paper system for allowing printed documents to be exited from the system while scrap paper ahead of, intermediate, or behind said printed documents are cut and deflected into a scrap or waste area within the system. In a continuous web document-printing system, under control of a control electronics, a brake halts the paper movement through the system and a knife cuts the paper into predetermined lengths of normal document sizes. A deflector system in the paper path following the cutter allows printed documents to pass out of the system while it deflects scrap sheets into said scrap area in the system.

3,728,921

APPARATUS FOR CUTTING A WEB INTO SHEETS AND POSITIONING THE SHEETS

Walter H. Vogel, Plymouth, Wis., assignor to Hayseen Manufacturing Company, Sheboygan, Wis.

Filed April 1, 1971, Ser. No. 130,379
Int. Cl. B65b 41/04, 41/18, 61/06
U.S. Cl. 83—151 15 Claims



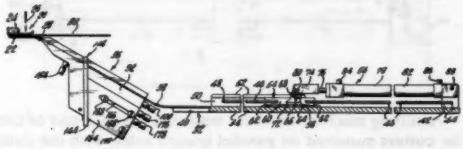
Apparatus in which a web of flexible sheet material, e.g., paper or plastic film, is unwound from a roll, and segmented into individual sheets, each sheet, as it is segmented from the web, being fed forward and accurately stopped in a working position in another apparatus such as a wrapping machine in which the sheet is caused to become wrapped around an article or articles. The cut-off sheet is fed forward by an endless belt conveyor arrangement and accurately stopped in the working position by a vacuum stop, with provision for fine adjustment of the working position of the sheet even while the apparatus is in operation.

3,728,922

APPARATUS FOR FEEDING AND CUTTING A BAND OF SHEET MATERIAL

Joseph W. A. Off, Dallas, Tex., assignor to Kayser-Roth Corporation, New York, N.Y.

Filed July 28, 1971, Ser. No. 166,755
Int. Cl. B26d 5/20
U.S. Cl. 83—277 10 Claims

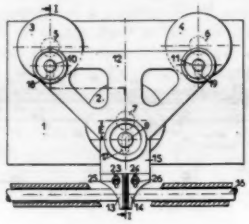


Apparatus for feeding and cutting a band of sheet material such as a waistband which is to be sewn to a garment. An elongated guide structure longitudinally guides the elongated band of sheet material to a predetermined location and a cutting structure is located at a given distance from this location for cutting across the band. A feeding structure coacts with the band for feeding the latter to be predetermined location after the band has been cut by the cutting means, and the feeding structure has a feeding stroke sufficiently great to displace a leading end of the band from the cutting means to the predetermined location.

3,728,923
CUTTING GUIDE, NOTABLY FOR CIGARETTE MAKING MACHINES

Raymond Lanore, Paris, France, assignor to Usines Decoufle, Paris, France

Filed July 29, 1971, Ser. No. 167,244
Claims priority, application France, Aug. 3, 1970, 7028595
Int. Cl. B23d 25/04
U.S. Cl. 83—318 3 Claims

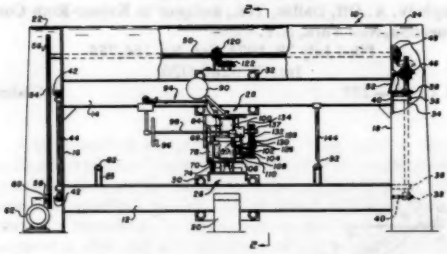


These cutter guides are of the type adapted to move while remaining constantly parallel to themselves and perpendicular to the cigarette rod, and rotating about an axis at a uniform tangential speed equal to the feed rate of said rod. Said guides are carried by a rigid connecting plate comprising three bearings mounted on three crankpins of corresponding separate similar disks one of said disks being rotatably driven while the others revolve freely about their axes. The construction is particularly simple and light in weight.

3,728,924
DOUBLE CARRIAGE SHEAR

Alwin O. Wutke, 636 East 53rd Avenue, Vancouver, British Columbia, Canada

Filed March 29, 1971, Ser. No. 128,893
Int. Cl. B23d 19/04
U.S. Cl. 83—426 9 Claims



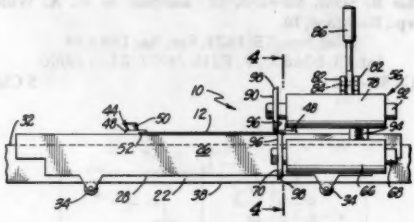
A cutting machine for sheet materials having a pair of circular cutters mounted on parallel spaced axles, with the cutting edges of the cutters touching each other and being slightly overlapped. A steerable, power driven feeding arrangement permits the cutting of variable curves. Straight cuts of infinite length and circles are also possible.

3,728,925
PAPER TRIMMER

Charles L. Peters, Anaheim, Calif., assignor to Box Innards, Inc., Anaheim, Calif.

Filed March 4, 1971, Ser. No. 121,047
Int. Cl. B26d 1/24
U.S. Cl. 83—441 2 Claims

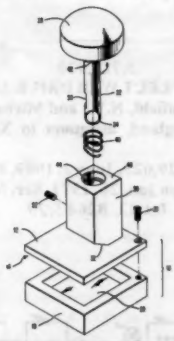
A paper trimmer for use in cutting a continuous strip of paper to a desired width as such a strip is conveyed along a path and occasionally moves tranversely to the path can be constructed utilizing a support extending transversely to the path, a carriage movably mounted on the support, guide means for engaging the strip and for conveying transverse motion of the strip to the carriage so as to move the carriage in accordance with such transverse motion and a cutter assembly mounted on the carriage for cutting the strip to a desired width as it moves along the path.



3,728,926
BOOK-INDEX NOTCHER

Harry B. Clayton, Ander Road RD No. 1, Lansdale, Pa.

Filed Jan. 7, 1971, Ser. No. 104,588
Int. Cl. B26d 7/16, 5/08
U.S. Cl. 83—467 9 Claims



A wedge-shaped guide is arranged to align the free edges of the book leaves in a fanned-out orientation as the cutting edge of a truncated hollow cylindrical plunger shears the leaves while being moved in a direction perpendicular to the base surface supporting the pages in the guide.

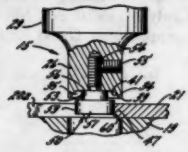
3,728,927
NIBBLING PUNCH

George Pfleiderer, Rockford, and Eugene H. Paquet, Winnebago, both of Ill., assignors to W. A. Whitney Corp., Rockford, Ill.

Filed Oct. 12, 1970, Ser. No. 79,986
Int. Cl. B26f 1/14
U.S. Cl. 83—621 1 Claim

A nibbling punch including a body with a downwardly projecting heel around its lower end to embed in the upper por-

tion of a workpiece to prevent lateral sliding of the punch as the latter is driven through the workpiece. In operations where the workpiece is manually indexed relative to the punch, a



pilot punch is connected to the nibbling punch to act as a locater and to determine the extent of the next bite made by the nibbling punch.

3,728,928

SHOULDER PAD ARRANGEMENT FOR A VIOLIN OR VIOLA

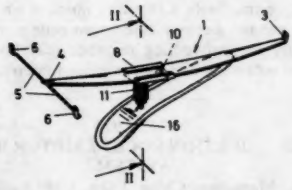
Ursula Looser, nee Menge, 3274 Hermrigen, and Max Fluckiger, Holzgasse, 2575 Tauffelen, both of Switzerland

Filed Sept. 20, 1971, Ser. No. 181,731

Claims priority, application Switzerland, Sept. 25, 1970, 14228/70

Int. Cl. G10d *1/02*

U.S. Cl. 84—280 **6 Claims**



A carrier strap is resiliently clamped to the back of a violin or viola. A helical spring mounted on a slide movable along the strap is attached to a shoulder pad by an internally threaded connector disc on the spring and a threaded stud on the pad. The spring permits universal pivotal movement of the pad and biases the pad toward a normal angular position. The pad may be shifted longitudinally of the strap with the slide and threadedly toward and away from the strap, and may be fixed in the shifted position by a set screw on the slide and a lock nut on the stud.

3,728,929

MOUTHPIECES FOR MUSICAL INSTRUMENTS

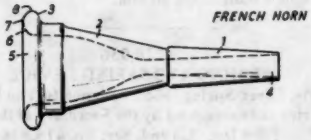
Neill Joseph Sanders, 25 Dollis Avenue, London, England

Filed May 26, 1972, Ser. No. 257,097

Claims priority, application Great Britain, June 4, 1971, 19,003/71

Int. Cl. G10d *9/02*

U.S. Cl. 84—398 **7 Claims**



A mouthpiece, particularly for the orchestral brass instruments having an invert lay, whereby the ridge, or high spot, of the rim of the mouthpiece is sensed by the instrument player as being nearer the rim periphery than to the mouthpiece cup.

The contour of the mouthpiece, in axial cross-section, provides a radiused transition region from the mouthpiece rim to the outer periphery and a further radiused transition region from the mouthpiece rim to the inner cup. Therebetween is a flat region which is downwardly inclined in the inward direction, so providing the rim with a circular ridge which is nearer to the periphery than to the cup.

3,728,930

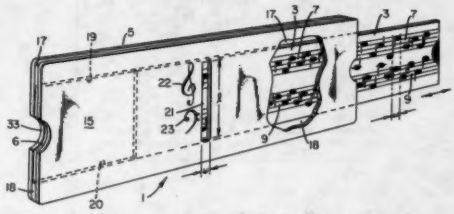
MUSIC TRAINING DEVICE

William Maron, 1235 Buchanan Drive, Santa Clara, Calif.

Filed July 26, 1971, Ser. No. 166,062

Int. Cl. G09b *15/00*

U.S. Cl. 84—471 **4 Claims**



A music training device in the form of a slide member with a plurality of musical staves scored thereon in parallel relationship to one another; a means for forming a guide track in which the slide member may travel, the guide means further including at least one viewing window in the path of travel of the slide, whereby the staves on which notes are shown may pass said window responsive to movement of the slide.

3,728,931

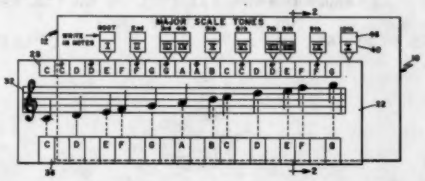
SCALE INTERVALOMETER

Verna M. Leonard, 6353 North Blackstone, Fresno, Calif.

Filed Aug. 13, 1971, Ser. No. 171,560

Int. Cl. G09b *15/02*

U.S. Cl. 84—471 **4 Claims**

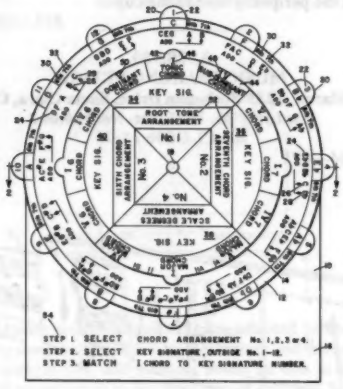


A device for use by students of music which can be constructed very economically from two sheets of paper or other sheet material to provide the student with quick and easy identification of a root tone and the remaining scale tones and their relationships, including chords and chord inversions, upon his merely adjusting a slider on a holder which may be placed on the keyboard if desired. The fact that for both major and minor scales the intervals are fixed by convention makes it possible to make the slider measure off the intervals against a fixed chromatic scale for the various keys in either mood. Ordinarily the device will have at least two sliders, one for major and one for minor, but the same sliders or other sliders, in a set thereof, are provided with indicators pointing out scale degrees with chords and chord inversions as well as the simple scale tones and their intervals.

3,728,932
QUICK FINDER FOR CHORDS

Verna M. Leonard, 6353 North Blackstone, Fresno, Calif.

Filed Aug. 13, 1971, Ser. No. 171,561
Int. Cl. G09b 15/02
U.S. Cl. 84—473 3 Claims

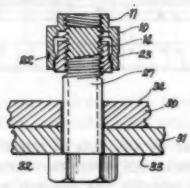

KEY SIG.
ROOT TONE ARRANGEMENT
No. 1
No. 2
No. 3
No. 4
SIXTH CHORD ARRANGEMENT
SEVENTH CHORD ARRANGEMENT
SCALE DEGREES ARRANGEMENT
STEP 1. SELECT CHORD ARRANGEMENT No. 1, 2, 3 or 4.
STEP 2. SELECT KEY SIGNATURE, OUTSIDE No. 1—12.
STEP 3. MATCH I CHORD TO KEY SIGNATURE NUMBER.

A device for quickly ascertaining various chords identified with any key signature in the cycle of fourths, the device having two rotatable dials so that the key signature and the chords to be read can be disposed at the top of the device where reading and interpretation is easiest without mental gymnastics required to transpose or invert mentally the chord information provided by the device. For further facilitating the use of the device the inner dial has not only one segment with three principal chords, tonic, dominant and sub-dominant for the selected key signature but three further segments naming the chords otherwise as sixth, and seventh chords and as related to a complete split scale degree arrangement.

3,728,933
MEANS AND METHOD FOR CONTROLLING TENSION IN A THREADED MEMBER

William L. Grube, Mundelein, Ill., assignor to Mac lean-Fogg Lock Nut Co., Mundelein, Ill.

Continuation of Ser. No. 791,366, Jan. 15, 1969, abandoned.
This application March 11, 1971, Ser. No. 123,395
Int. Cl. F16b 31/02, 39/02
U.S. Cl. 85—61 18 Claims

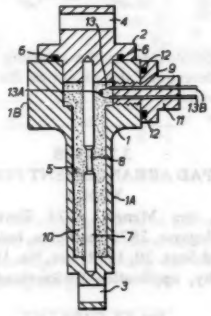


The clamping load on a bolt or other threaded member is controlled by using a pair of nuts, one within the other, and both driven together simultaneously to contact one of the elements to be clamped, the outer one first taking the load and then fracturing along a pre-arranged circumferential line upon the imposition thereon of a predetermined axial load, the spring-back in the system then transferring the load from the fractured nut to the inner nut. The outer nut continues advancing against the inner nut as a jam nut.

3,728,934
CONNECTING DEVICES

Malcolm George Palmer, Blakedown, near Kidderminster, England, assignor to Electric Reduction Company of Canada Ltd., Toronto, Islington, Ontario, Canada

Filed July 21, 1970, Ser. No. 56,887
Claims priority, application Great Britain, July 24, 1969, 37,245/69
Int. Cl. F42b 22/00
U.S. Cl. 89—1 B 4 Claims

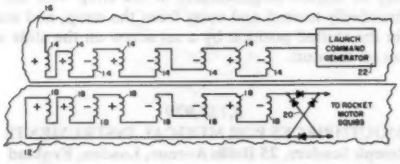


Irreversibly severable mechanical and/or electrical linkage useful in submarine oceanographs comprises a connecting member in contact with a thermite mixture which may be ignited so as to destroy the connecting member. Advantageously the connecting member may be of aluminum and the thermite mixture may comprise silicon and red lead.

3,728,935
CODED INDUCTION ROCKET MOTOR IGNITION SYSTEM

William R. Magorian, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 5, 1972, Ser. No. 215,693
Int. Cl. F41f 3/04
U.S. Cl. 89—1.811 5 Claims



An inductor network, for firing missiles to be launched from an aircraft, which includes a series of small electromagnets that are wired in a particular coupling code to minimize accidental triggering of a missile, and are arranged along a weapon attachment pylon for cooperating with a similar set of electromagnets built into a missile.

3,728,936
ARMING AND SAFING DEVICE

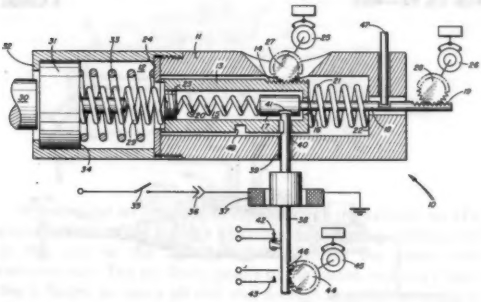
Bob Norris, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 3, 1964, Ser. No. 415,826
Int. Cl. F41f 3/04
U.S. Cl. 89—1.812 7 Claims

1. In a self-propelled fuel burning type missile of a character containing a nuclear warhead and adapted to be launched

from a high speed aircraft, an arming and safing device for the warhead comprising,

means responsive to gas pressure forces generated by fuel burned during missile propulsion and applied in a manner for driving timer mechanisms and closing respective contacts thereon which are incorporated in the warhead arming circuit,



first and second releasable locking means for said timer mechanisms driving means,

electrically actuated means responsive to an intent-to-launch signal generated from within the launching aircraft for unlocking said first locking means,

and means responsive to forces and/or influences occasioned by the separation of the missile from the launching aircraft for unlocking said second locking means.

3,728,937

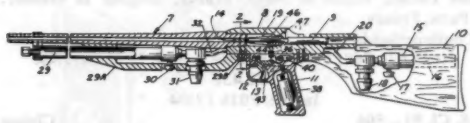
GAS FIRED CASELESS AMMUNITION RIFLE

Bruce C. Nelson, 6304 Martin, Detroit, Mich., and Alphonse G. Scibor, 6540 Longacre, Detroit, Mich.

Filed April 30, 1971, Ser. No. 138,925

Int. Cl. F41f *1/04, 11/00*

U.S. Cl. 89—7 **1 Claim**



A caseless ammunition, bolt action, rifle charged with gas and fired electrically. The firing chamber is sealed with a truncated cone insert, having thin walls which are contracted around the bolt by gas pressure, to seal against back pressure leakage.

3,728,938

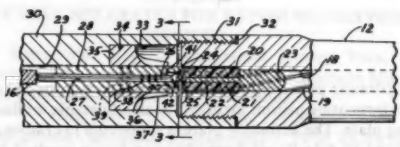
BREECH SEAL FOR CASELESS AMMUNITION FIREARM

Alphonse G. Scibor, 6540 Longacre, Detroit, Mich., and Bruce C. Nelson, 6304 Martin, Detroit, Mich.

Filed April 16, 1971, Ser. No. 134,592

Int. Cl. F41c *11/00*

U.S. Cl. 89—26 **3 Claims**



A truncated cone insert, positioned in a chamber in the breech block, and having a central bore for receiving the bolt, the reduced end of the cone being adjacent to the ammunition charge, and arranged to be radially compressed by the gas pressure, when fired, to seal the breech.

3,728,939

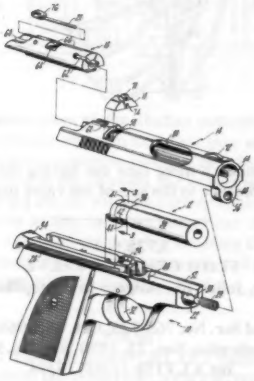
APPARATUS FOR JOINING THE SLIDE-BOLT AND THE BARREL-FRAME OF A FIREARM

Gary Wilhelm, Hamden, Conn., assignor to Plainfield Ordinance Corporation, Middlesex, N.J.

Filed Sept. 24, 1971, Ser. No. 183,601

Int. Cl. F41c *11/00, 21/00*

U.S. Cl. 89—196 **13 Claims**



A first member of at least partly tubular configuration is keyed to a solid member disposed within the tubular member by means of a lock piece. In a firearm, the tubular member, which is provided with a cut out extending generally transverse to the path of motion of the slide, will comprise the slide and the solid member, which is provided with a recess for receiving the lock piece, will comprise the bolt. The lock piece will have a size and shape at least commensurate with the combined dimensions of the slide cut out and bolt recess, which will be aligned, and will be retained in position by an axial pin having a bent over and forwardly extending spring loaded locking tab which engages the exterior of the slide. In the environment of a firearm the invention further comprises the frame having a precision barrel bedding recess and a barrel characterized by two diameters with a portion of the smaller diameter barrel section defining the barrel bedding; the remainder of the smaller diameter barrel section being circumscribed by a collar.

3,728,940

APPARATUS FOR CUTTING VALVE SEATS IN ENGINE CASTINGS

Bertil G. Peterson, Bloomington, Minn., assignor to Tobin-Arp Manufacturing Company, Minneapolis, Minn.

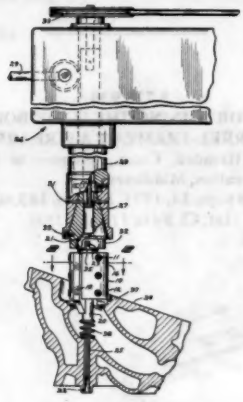
Filed Feb. 1, 1971, Ser. No. 111,354

Int. Cl. B23c *3/00*; **B23d** *77/14*

U.S. Cl. 90—12.5 **1 Claim**

A valve seat is cut in a cylinder head or other engine casting in concentric relation to a valve stem opening therein. A boring head, driven from outside the cylinder head, rotates on a cylindrical arbor concentrically mounted in the valve stem

opening. Three tool bits are precisely positioned on the boring



head so as to make a three face cut having the exact profile desired with reference to the axis of the valve stem.

3,728,941

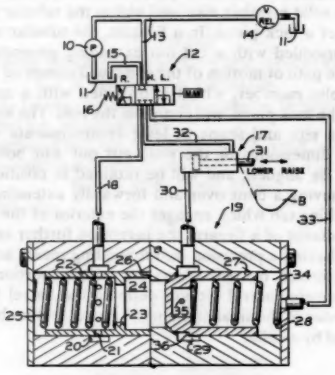
FLOW CONTROL VALVE

John R. Cryder, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 768,733, Oct. 18, 1968, abandoned. This application Nov. 23, 1970, Ser. No. 92,192

Int. Cl. F15b *11/08, 13/04*

U.S. Cl. 91—447 **7 Claims**



A fluid circuit includes a flow control valve comprising surge damping and counterbalance pressure control valves for controlling the actuation of a cylinder having the rod thereof operatively connected to an implement, such as a loader bucket lift arm. The counterbalance pressure control valve maintains a sufficiently high back pressure in the cylinder during the "hold" phase of loader operation to prevent the loader bucket from creeping downwardly. The surge damping valve co-operates with the latter valve to freely communicate pressurized fluid to the cylinder during the "raise" phase of loader operation and to automatically regulate return flow during the "lower" phase in direct proportion to the magnitude of load imposed on the cylinder rod by the loader bucket.

3,728,942

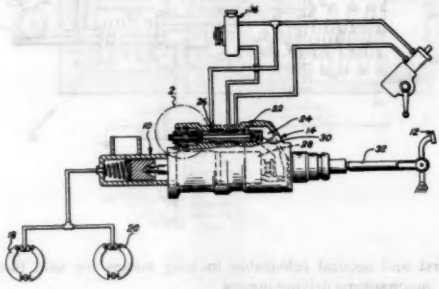
HYDRAULIC BRAKE BOOSTER PRESSURE LIMITING DEVICE

Arthur K. Brown, Jr., South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Jan. 22, 1971, Ser. No. 108,828

Int. Cl. F15b *13/10, 11/08, 13/04*

U.S. Cl. 91—469 **1 Claim**



A hydraulic brake booster pressure limiting device for use in a vehicle braking system to prevent booster pressures from becoming great enough to burst brake hoses. When the booster spool valve returns to a normal operating position thus safely restricting the pressure admitted to the boost chamber from the hydraulic pump, operation of the pressure limiting device is suspended so that the booster may modulate to assist the vehicle operator with the brake application.

3,728,943

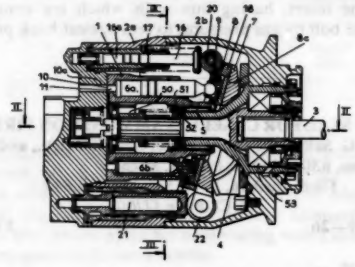
HYDRAULIC PUMPS OR MOTORS OF THE ROTATING BARREL TYPE

Rene Lucien, Haute de Seine, France, assignor to Messier, Paris, France

Continuation-in-part of Ser. No. 780,699, Dec. 3, 1968, Pat. No. 3,631,764. This application June 9, 1971, Ser. No. 151,436

Int. Cl. F01b *13/04*

U.S. Cl. 91—506 **12 Claims**

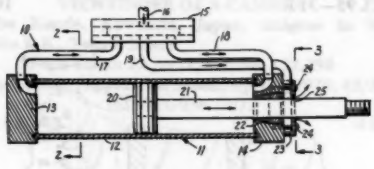


A hydraulic pump or motor comprises a rotary barrel carrying reciprocating pistons attached to an adjustable inclined actuating plate. The actuating plate is supported in cradles and is subjected to side thrust from shearing forces applied by the pistons to the plate. At least one side bearing is attached to the actuating plate for contact with an adjacent cradle under the action of the side thrust.

3,728,944
PISTON ROD AIR CLEANING DEVICE

Robert S. Marrara, Box 172, Arthurdale, W. Va.

Filed Jan. 15, 1971, Ser. No. 106,860
Int. Cl. F01b 31/00
U.S. Cl. 92—87 6 Claims

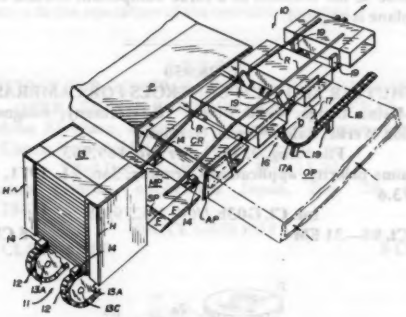


A piston rod air cleaning device in which the exhaust air of a pneumatic motor is fed to a chamber surrounding a piston rod at the end of the cylinder throughwhich the piston rod reciprocates. The air flows axially of the piston rod away from the cylinder to carry all dirt and foreign material away from the cylinder. In hydraulic actuated cylinders a similar chamber is provided and fed with air from a separate air supply.

3,728,945
APPARATUS FOR ERECTING CARTONS

Ralph O. Vuilleumier, Malvern, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 13, 1971, Ser. No. 207,071
Int. Cl. B31b 1/80
U.S. Cl. 93—53 R 12 Claims



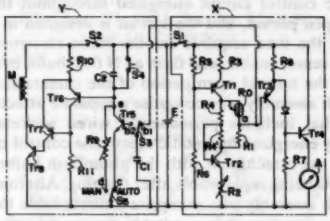
Apparatus for erecting cartons from a flattened condition thereof including a conveyer for moving flattened cartons at regular intervals; structure for directing a blast of air at a pressure greater than ambient against an end of the carton to partially erect the same while being conveyed; structure opposing the air blast; structure in spaced relationship to the conveyor and in increasing spaced relationship thereto to accommodate the erecting movement and to prevent dislodgement of the partly erected blank by the air blast; and structure for trapping and removing the erected carton.

3,728,946
SWITCHING APPARATUS FOR EXPOSURE CONTROL DEVICES

Yoshio Kuramoto; Kayoshi Tsujimoto; Kotaro Yata, and Masayoshi Sahara, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed July 6, 1971, Ser. No. 159,886
Claims priority, application Japan, July 7, 1970, 45/58754
Int. Cl. G03b 7/08, 17/18
U.S. Cl. 95—10 CT 8 Claims

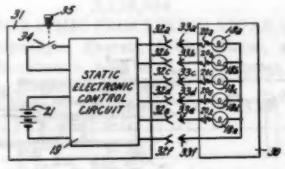
Switching mechanism in an exposure control device for a photoconductive camera reduces unnecessary battery consumption by disconnecting the power source from a light measuring circuit and a mechanism for actuating shutter closing during those times when either the output of the light measuring circuit and/or the actuation of the shutter are not required. Manually operative individual switches respectively interconnect the light measuring circuit and the shutter actuation mechanism with the power source. A button switch movable between first and second positions engages with a locking member to prevent actuation of the shutter release button to prevent interconnection of the shutter actuating mechanism with the power source when an exposure time setting member is set to an automatic exposure position and the button switch is in the first position for opening the switch interconnecting the light measuring circuit with the battery source. Rotation of the exposure time setting member to any one of a number of positions rotates the locking member enabling the release button to be depressed and the interconnection of the shutter actuating mechanism with the battery source.



3,728,947
STATIC ELECTRONIC PHOTOFLASH ASSEMBLY AND METHOD OF PHOTOFLASH LIGHTING

John D. Harnden, Jr., and William P. Kronrumpf, both of Schenectady, N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Dec. 16, 1968, Ser. No. 784,093
Int. Cl. G03b 15/03
U.S. Cl. 95—11.5 R 22 Claims



A static electronic photoflash assembly and method of photoflash lighting is provided for reliably and selectively sequentially flashing at least one of an array of N flashbulbs with a start-flash electrical signal developed by a camera shutter actuated switch or other similar electrical signal producing device. The static electronic photoflash assembly is coupled to and controlled by the start-flash electric signal and is electrically coupled to and controls the array of N flashbulbs for selectively sequentially flashing at least one of the N bulbs. For this purpose, the static electronic control circuit includes enabling logic circuitry for identifying and establishing through the use of solid state semiconductor devices enabling electric circuit connections to at least one unflashed bulb in an array of N bulbs in advance of the bulb being flashed. For this purpose the logic circuit may comprise either a permanent memory type of logic circuit for remembering which of the N flashbulbs are unflashed, and for establishing enabling electric circuit connections to at least one unflashed bulb. Alternatively, the enabling logic circuit may comprise an arrangement for

identifying and establishing the enabling circuit connections to an unflashed bulb at the instant that the start-flash electrical signal occurs. Preferably, the electronic control circuit further includes monitoring logic circuitry for sensing that a light flash has indeed occurred, and establishing enabling electric circuit connections to additional unflashed bulbs in the event that no light-flash has been produced for reliably selectively flashing at least one of the unflashed bulbs, preferably sequentially. The start-flash electrical signal generally is produced by a camera shutter actuated switch which maintains the static electronic control circuit energized throughout the camera shutter-open period, and the circuit is designed in a manner such that the time required for the static electronic control circuit to sense, enable, and flash all N flashbulbs in an array is less than the normal open period of the camera shutter. The photoflash assembly may comprise a separate attachment to a camera that includes permanently wired sockets that are selectively energized by a static electronic control circuit that is part of the attachment with the photoflash bulbs seated in the sockets being replaceable after flashing. Alternatively, the photoflash assembly may comprise a discardable throw-away type of an attachment to a suitably designed camera that includes the static electronic control circuit. In either form of the invention, the static electronic control circuit preferably is fabricated by integrated circuit techniques. The static electronic control circuit also preferably includes static electronic switching devices connected in series circuit relationship with the individual flashbulbs in the array, and the switching devices employed may comprise silicon controlled rectifiers, complementary SCRs, triacs, silicon controlled switches, silicon bilateral switches, silicon unilateral switches, gate turn-off silicon controlled rectifiers, field effect transistors, unijunction transistors, programmable unijunction transistors, equivalent discrete transistor configurations, and the like.

3,728,948

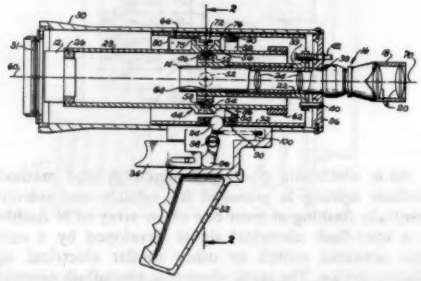
IMAGE MOTION COMPENSATION MECHANISM

David B. Fraser, Maple Glen, Pa., assignor to Dynasciences Corporation, Los Angeles, Calif.

Filed Dec. 28, 1970, Ser. No. 101,951

Int. Cl. G03b

U.S. Cl. 95—12.5 **11 Claims**



An image motion compensation mechanism for an optical system in which random angular motion of the viewing device is compensated by a pivotal system in which the objective lens is mounted on an inertial balance member so as to pivot relative to a predetermined plane in the optical path in order to maintain the optical axis of the objective parallel to the desired line of sight. If the system is a telescope or other such viewing device, the pivot plane is defined at a distance from the objective related to the magnification of the system. If the system is a camera, the plane is coincident with the film plane.

3,728,949

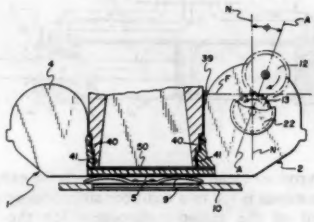
GEAR DRIVE FOR A CAMERA AND FILM CARTRIDGE

Evan A. Edwards, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 25,957, April 6, 1970, abandoned. This application July 13, 1971, Ser. No. 162,283

Int. Cl. G03b *19/04*

U.S. Cl. 95—31 R **10 Claims**



A film cartridge includes supply and take-up chambers, a wall interconnecting the chambers to support film therebetween in a plane, and a gear rotatable about an axis for transporting the film across the film plane from the supply chamber to the take-up chamber. A camera for receiving the cartridge includes a cartridge supporting surface and a drive gear engageable with the gear of a received cartridge to define a pressure angle therebetween. The gear axes define a plane which is offset from a normal to the film plane by an angle equal to the pressure angle of the gears, thereby creating a line of force parallel to the film plane so that any tendency of the cartridge to be unseated from the supporting surface in response to the creation of a force component normal to the film plane is negated.

3,728,950

SHUTTER AND FILM CONTROLS FOR CAMERAS

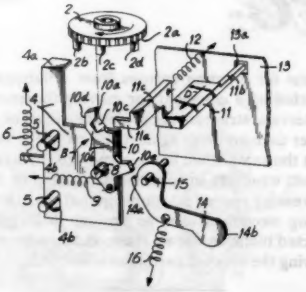
Karl-Heinz Lange, 4980 Bunde 18, Germany, assignor to Balda Werke, Balda Werke, Germany

Filed Aug. 9, 1971, Ser. No. 169,953

Claims priority, application Germany, Jan. 21, 1971, P 21 02 773.6

Int. Cl. G03b *1/04, 1/62, 9/68*

U.S. Cl. 95—31 FM **5 Claims**



A camera having a structure for controlling the tripping of the shutter and the movement of the film. A film-engaging structure has a position for holding the film against movement as well as a retracted position displaced from the film. A shutter-tripping structure when moving from a cocked to a rest position engages the film-engaging structure to retract the latter away from the film, the shutter-tripping structure also tripping the camera shutter when released by manual operation from its cocked position for movement to its rest position. The shutter-tripping structure is displaced from its rest to its cocked position in connection with the transportation of the

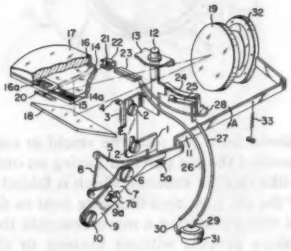
film, and this movement of the shutter-tripping structure releases the film-engaging structure for movement to its film holding position.

3,728,951

DEVICE FOR ILLUMINATING INDICIA IN THE VIEWFINDER OF A CAMERA

Hidenobu Kondo, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed March 23, 1971, Ser. No. 127,290
Claims priority, application Japan, April 7, 1970, 45/32838
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 **4 Claims**



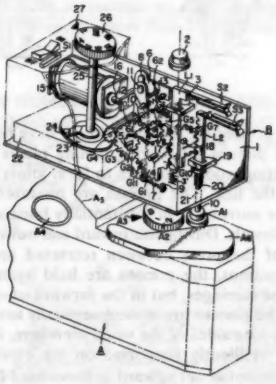
In a single lens reflex camera having a pre-set diaphragm, means is provided for illuminating the indicia found on the viewfinder. The illuminating means includes a light source, and a set of switches associated with a manually operable member so as to activate and deactivate the light source in response to the operation of the operable member.

3,728,952

DEVICE FOR CONTROLLING SHUTTER RELEASE OPERATION IN PHOTOGRAPHIC CAMERAS

Takehiko Kiyohara, Kaza-gun, Zama-machi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1971, Ser. No. 211,346
Claims priority, application Japan, Dec. 28, 1970, 45/128421
Int. Cl. G03b *9/58*
U.S. Cl. 95—53 EB **5 Claims**



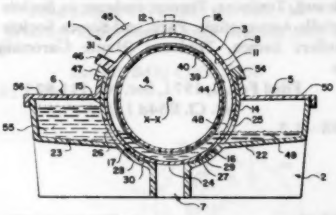
A device for controlling shutter release operation in photographic cameras comprises a connecting member connected to a camera's shutter release member to effect shutter release operation. The connecting member and an operable starting member are connected together by an intermediate connecting member capable of releasably establishing a mechanical connection by means of an electromagnetic member. The intermediate connecting member is engaged and disengaged under control of time limit means adapted to carry out a predetermined time limit action.

3,728,953

DEVICE FOR PROCESSING PHOTOGRAPHIC MATERIAL

John Edwin Morse, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 31, 1971, Ser. No. 176,630
Int. Cl. G03d *3/08*
U.S. Cl. 95—93 **5 Claims**



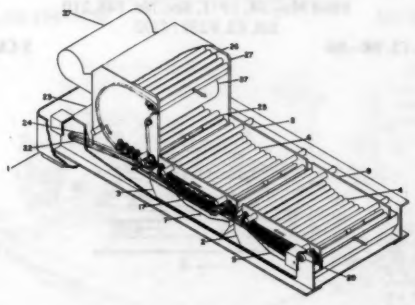
A device for processing photographic material wherein a processing chamber, including a peripheral wall and a solution ingress and egress opening in the wall, is supported for movement between processing solution receiving and draining positions. In such receiving position, the chamber is disposed so that the opening aligns with a processing solution applicator for introducing processing solution into the chamber and the wall closes off a processing solution drain. Moveover, in such draining position, the chamber is disposed so that the opening aligns with the drain to remove processing solution from the chamber and the wall closes off the applicator. The chamber is adapted to receive a support on which photographic material is secured; whereupon, processing solution in the chamber is applied to such material. Upon movement of the support within the chamber, the processing solution is agitated to facilitate processing of the photographic material.

3,728,954

PHOTOGRAPHIC PROCESSING APPARATUS

Thorald E. Montague Everett, White Plains, and Joseph Charipar, Stonybrook, both of N.Y., assignors to A & M Research, Inc., White Plains, N.Y.

Filed June 3, 1971, Ser. No. 149,530
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **2 Claims**



A photographic processing apparatus is provided which comprises a transport system for conveying photographic material successively through a developing zone, a fixing zone, a washing zone and a drying zone with no deleterious contact

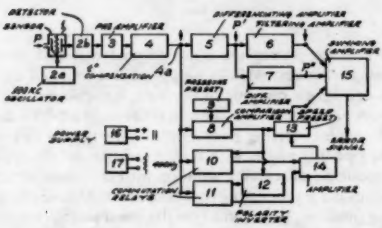
to the materials being transported or conveyed. The transporting system comprises a series of oppositely offset rollers which are designed to achieve the desired conveyance with minimum change of direction. The novel washing zone comprises a plurality of angled opposed water jets which are preceded and followed by opposed drying rollers. For ease and convenience of operation, the device is designed so that the developed dried film is delivered toward the feeding station at the front thereof.

3,728,955

METHOD AND DEVICES FOR REGULATING THE PRESSURE AND ITS RATE OF VARIATION IN A CHAMBER

Pierre Ricaud, Toulouse, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris and Semca Societe Anonyme des ateliers Semca, Toulouse (Haute Garonne), both of France

Filed Feb. 2, 1971, Ser. No. 111,925
Int. Cl. B64d *13/04*
U.S. Cl. 98—1.5 **14 Claims**



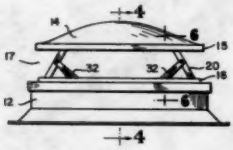
A method and devices for regulating the pressure of a compressible fluid in a chamber located in an atmosphere in which the pressure is variable, wherein a single pressure sensor inside the chamber is associated with electronic differential calculus means for generating an error signal and, thereafter, after summing said error signal with a repeater signal of the position of a valve for discharging said compressible fluid from said chamber, which chamber is continuously supplied with fluid by conventional means, a signal for actuating said valve.

3,728,956

SMOKE AND HEAT RELIEF VENT

Thomas R. Field, Indianapolis, Ind., assignor to Jenn-Air Corporation, Indianapolis, Ind.

Filed May 24, 1971, Ser. No. 146,210
Int. Cl. F23l *17/02*
U.S. Cl. 98—86 **5 Claims**



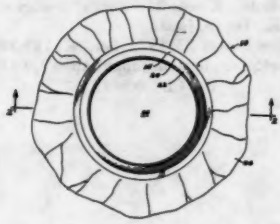
A smoke and heat relief vent for use on building roofs and arranged for automatic or manual opening to release smoke and/or heat resulting from fire inside a building. Manual release is operable for causing opening of the vent at any time.

3,728,957

BAKING SHIELD

Louise Polus, 109 Slack Drive, Anderson, Ind.

Filed Dec. 2, 1971, Ser. No. 204,127
Int. Cl. A47j *37/01*
U.S. Cl. 99—433 **9 Claims**



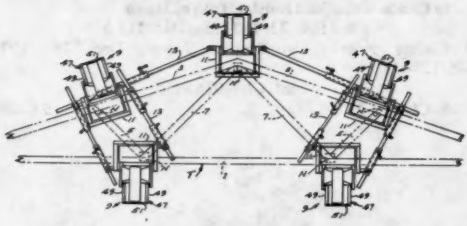
A baking shield for a pie pan, the shield in use extending peripherally around the pie pan and having an outer member of foil or foil-like flexible sheeting which is folded around the outer edge of the pie pan, thus blocking heat to the pie crust periphery and thus permitting a more desirable thoroughness of the pie baking process without burning or charring the outer edge or periphery of the pie crust.

3,728,958

APPARATUS FOR FABRICATING WOOD STRUCTURES

Walter G. Moehlenpah, and David N. Husman, both of St. Louis, Mo., assignors to Hydro-Air Engineering, Inc., St. Louis, Mo.

Filed Jan. 8, 1968, Ser. No. 696,323
Int. Cl. B30b *15/00*
U.S. Cl. 100—100 **36 Claims**



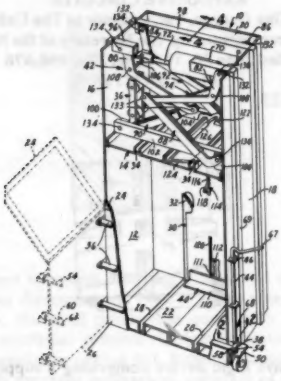
Hydraulic presses are disclosed which have relatively movable opposed platens for driving nailing plates into opposite sides of abutting wood members to form joints for wood roof trusses and the like. The presses are mounted on carriages supported for movement in substantially horizontal planes on stands or pedestals. During this inward and outward horizontal movement of the press between retracted and forward or operative positions, the presses are held against movement relative to the carriages, but in the forward or operative positions, when the platens are moved vertically toward and away from the opposite sides of the wood members, the presses are floatingly or resiliently supported on the carriages so as to avoid any substantial net upward or downward force being applied to the wood members during pressing of the plates into the wood. In one embodiment this is accomplished by employing a spring arrangement supporting the press, while in another embodiment a pneumatic system is employed for this purpose. Also described are such presses supported on pedestals which are made easily movable by an air lift system to different positions on a locating grid.

3,728,959

BALER

Wallace F. Fredrickson, 5224 Penn. Avenue N., Minneapolis, Minn.

Filed Oct. 27, 1970, Ser. No. 84,371
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 18 Claims



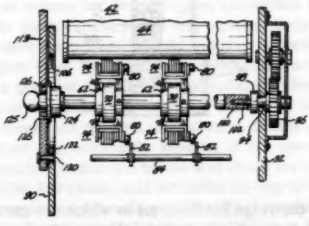
A baler having an improved hydraulically driven toggle mechanism for operating a baler pressing platen, improved bale ejector, and improved baler door latch. The toggle mechanism includes opposed pairs of first and second arms, each first arm of which is a generally C-shaped bell crank arm. The first arms are connected to provide a pressing mechanism which is compact but nonetheless has a long pressing stroke to facilitate production of a large bale in only a few pressing strokes. The bale ejector comprises a lifting plate having a hook which when engaged by a finger secured to the platen lifts the underside of a bale from the rear of the box as the platen is raised to cant the bale onto its forward edge permitting its easy removal from the baler. The lifting plate hook travels in a slot in the baler rear wall and is disengaged from the platen finger by a stop across the slot to drop the lifting plate to the bottom of the box in position for commencement of pressing of a new bale. And, the door latch comprises a rotatable pin and pivotal catch having arced and arcuate surfaces respectively which roll against each other during opening of the door latch to provide an easy opening door latch even when under heavy pressure from a compressed bale.

3,728,960

ROTARY NUMBER PRINTER WITH END-WISE WITHDRAWAL FOR ACCESSIBILITY

Howard W. Heath, Seattle, Wash., assignor to Heath Printers Inc., Seattle, Wash.

Filed May 19, 1972, Ser. No. 255,228
Int. Cl. B41k *3/14*
U.S. Cl. 101—76 7 Claims



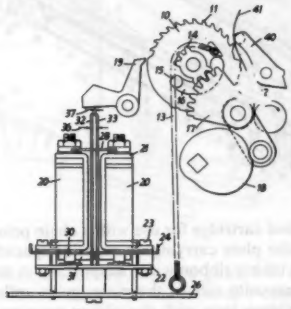
Number-printing apparatus arranged in tandem to off-set lithographic printing apparatus is disclosed. The number-printing apparatus is capable of end-wise withdrawal from the printing zone, practically inaccessible to the press operator, for the convenient, rapid resetting of the numbering mechanism. The number-printing apparatus may be singly employed or such may be employed in a paired set so that, when one such apparatus is in the printing zone and operating to print numbers the other is disposed outside of the machine and readily available for re-setting by the press operator.

3,728,961

ARRANGEMENT FOR ELECTROMAGNETICALLY SETTING DRUM SERIES PRINT WHEELS

Henry Gross, and Samuel Gross, both of London, England, assignors to Gross Cash Registers Limited, London, England

Filed July 8, 1971, Ser. No. 160,714
Claims priority, application Great Britain, July 18, 1970, 34,929/70
Int. Cl. B41j *45/00, 1/60*
U.S. Cl. 101—99 6 Claims



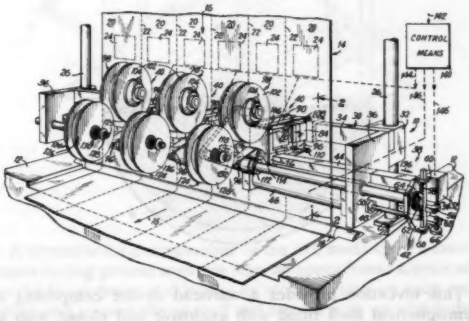
A printing device, e.g., for a calculator having a row of print wheels located in relative positions by a series of pawls which in turn are actuated by electromagnetic coils through stems which are shaped to such angles at their pawl engaging ends that the coils can occupy a wider space than the wheels and pawls.

3,728,962

MARKING APPARATUS FOR MULTI-LANE WEB MATERIAL

John E. Sherrington, Maidenhead, England, assignor to Adolph Gottscho, Inc., Union, N.J.

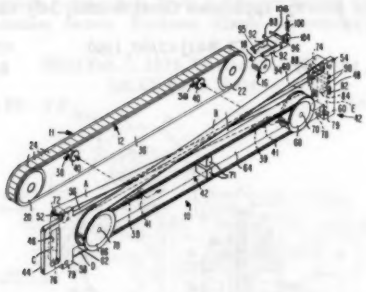
Filed Dec. 28, 1970, Ser. No. 101,932
Claims priority, application Great Britain, June 1, 1970, 26,327/70
Int. Cl. B41f *1/08*; B44b *5/00*
U.S. Cl. 101—288 12 Claims



A device for imprinting on multi-lane web material which is intermittently advanced therepassed including a carriage

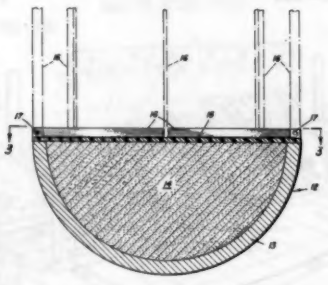
mounted for lateral displacement relative to the web on a frame fixed relative to said web. One or more printing apparatus are mounted on the carriage for imprinting when the web movement is interrupted, said carriage being displaced between at least two positions, each printing means being in registration with one of said lanes at each position.

3,728,963
RIBBON FEED CARTRIDGE
Albert A. Dowd, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 7, 1970, Ser. No. 62,119
Int. Cl. B41j *27/18*
U.S. Cl. 101—336 **8 Claims**



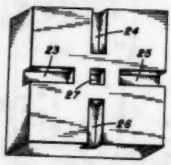
A ribbon feed cartridge for use with a chain printer consists of a rectangular plate carrying on one side spaced spools for storage of an inking ribbon while supporting, at the four corners on the opposite side of the plate, guide rolls defining a rectangular ribbon loop with the ribbon crossing over from side to side above one longitudinal edge of the plate. Pin and slot locking means allow the plate to be locked in place in parallel with the chain printer with a longitudinal run of the inking ribbon lying beneath the moving chain type carrier. Coupling of the ribbon feed cartridge plate to the chain printer support plate forces one end of the ribbon loop into contact with a capstan for driving the same.

3,728,964
AIMED WARHEAD
David D. Abernathy, Fredericksburg, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Sept. 15, 1966, Ser. No. 580,564
Int. Cl. F42b *25/16*
U.S. Cl. 102—2 **4 Claims**



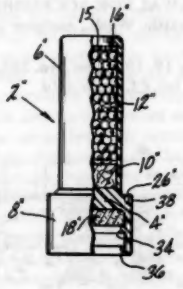
This invention provides a warhead device comprising a hemispherical shell filled with explosive and closed with a plastic back plate. A plurality of fins are pivoted on the periphery of the shell and normally are folded radially inward against the back plate. When the device is air dropped, it will fall in a nose forward attitude and the inertia of the fins will cause them to pop up parallel to the axis of the shell to provide flight stability. Because of the hemispherical shape, nearly all the fragmentation will be directed toward the target.

3,728,965
EXPLOSIVE CIRCUITS
Denis Silvia, King George, Va., assignor to The United States of America as represented by The Secretary of the Navy
Filed June 30, 1965, Ser. No. 468,676
Int. Cl. F42c *19/08*
U.S. Cl. 102—22 **5 Claims**



1. An explosive logic device comprising a supporting plate of inert material having formed therein at least one explosive filled groove-like trail interrupted along its length in a plurality of points by strips of inert material disposed at right angles thereto, said trail with said strips forming a pair of legs and a crossover means, said plate having also formed therein an explosive filled groove means terminating at said crossover means with a strip of inert material disposed at right angles to the length of said groove means and at right angles to one of said first-mentioned strips, each of said strips being of a sufficient breadth such that a plane wave caused by initiation of the explosive in one of said legs will be transmitted through its associated strip to the explosive in said crossover which in turn will detonate the explosive in the other of said legs if the explosive in said groove means has not previously been ignited causing a shock wave to be transmitted to said crossover means.

3,728,966
CARTRIDGE
William B. Woodring, Stoney Creek, Conn., assignor to Olin Mathieson Chemical Corporation, New Haven, Conn.
Filed May 7, 1968, Ser. No. 727,164
Int. Cl. F42b *7/06*
U.S. Cl. 102—42 C **15 Claims**

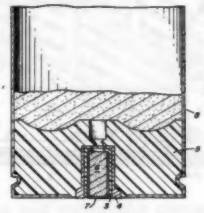


A cased cartridge for firearms in which the cartridge casing is expelled through the muzzle along with the projectile or projectiles to provide the advantages of caseless ammunition in a cased round.

3,728,967
TRI-PRI THREE CONTACT PRIMER

Charles J. Hinkle, Fredericksburg, Va., and Frank R. Marquardt, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy

Filed June 13, 1969, Ser. No. 835,896
Int. Cl. F42b *9/08*
U.S. Cl. 102—46 2 Claims

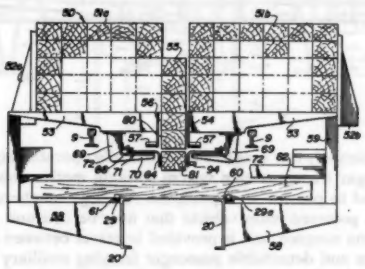


The present invention discloses a balanced electrically initiated primer directed toward use in a cartridge having a conductive mix electrical primer but could also be used with bridgewire electrical primers. Dielectric material is placed around the explosive primer mix, forming a capacitor configuration which prevents inadvertent initiation of the electroexplosive device.

3,728,968
UPPER TURNTABLE APPARATUS FOR POSITIONING RAILROAD TIES

John Edis Rymes, Calgary, Alberta, Canada, assignor to Mannix Co. Ltd., Calgary, Alberta, Canada

Filed Nov. 20, 1970, Ser. No. 91,257
Int. Cl. E01b *29/05*
U.S. Cl. 104—5 13 Claims

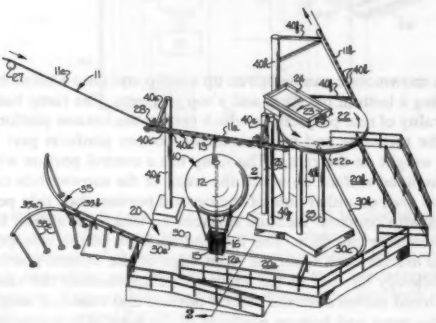


A tie delivering system for use in an apparatus for constructing railroad track sections comprising a support structure including a conveying path, means for conveying a plurality of longitudinally spaced ties along said path, means for delivering a pair of laterally spaced rails above said ties such that the rails are initially vertically spaced above the ties and come to rest on the ties and means for delivering an assembled track section from the path. The tie delivery system includes a tie storage structure mounted on said support structure at an elevation higher than the conveying means and arranged to hold ties in a position parallel to the rails, an elongated tie receiving chute extending downwardly from said tie support structure between and parallel to said rails, means associated with said chute for releasably holding a tie therein, a tie receiving turntable positioned below said chute for receiving a tie released from the chute, said turntable having an elongated tie receiving opening extending vertically therethrough and said turntable being rotatable through 90° in a horizontal plane positioned below said rails and above said conveying path, the rotation being between a location in which the turntable opening is in alignment with the chute and a location in which the turntable opening is longitudinally at right angles with the rails and means associated with said turntable opening for holding a tie therein and releasing the tie to be deposited onto the conveyor when the turntable opening is at right angles with the rails.

3,728,969
STABILIZING MEANS FOR TRAM CARS

Samuel P. Goforth, and Joseph A. Goforth, both of Shelby, N.C., assignors to Goforth Brothers, Inc., Shelby, N.C.

Filed April 19, 1971, Ser. No. 135,161
Int. Cl. B61b *11/00*
U.S. Cl. 104—28 5 Claims

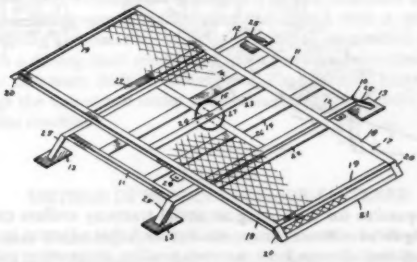


A substantially vertically disposed guide bar is carried by and extends downwardly from the floor of a cable suspended tram car, and a loading platform is provided with means defining an elongate slot therein open at both ends and into which the guide bar passes as the car approaches and passes closely above the platform whereby the walls of the slot limit lateral movement of the guide bar and thereby limit lateral swinging of the tram car while it is disposed above the platform.

3,728,970
TURNTABLE

Robert G. Christensen, R. D. No. 1, Franklin Center Road, Cranesville, Pa.

Filed May 11, 1970, Ser. No. 36,165
Int. Cl. B60s *13/02*
U.S. Cl. 104—44 1 Claim

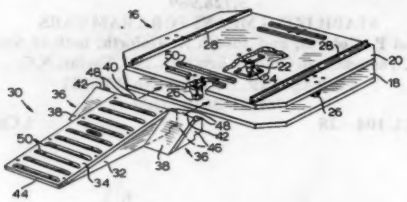


A turntable for a snowmobile or the like made up of a lower frame having ground engaging legs, an upper frame supported on the lower frame and having an inclined ramp on each end which will engage the ground and form a path up which the snowmobile may climb. The upper frame is covered with expanded metal and has cleats fastened to it.

3,728,971
TURNTABLE AND RAMP FOR SNOWMOBILES

William Merrick, 1055 Bloor St., East, Apt. 1506, Mississauga, Ontario, Canada

Filed Sept. 1, 1971, Ser. No. 176,835
Int. Cl. B60s 13/02
U.S. Cl. 104—44 7 Claims

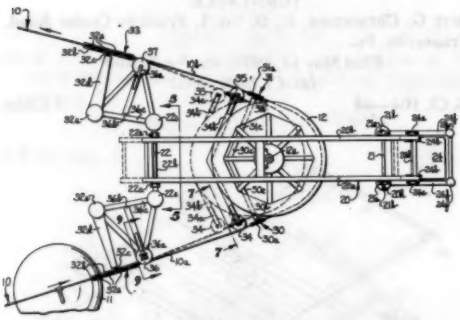


A snowmobile can be driven up a ramp and onto a turntable having a bottom platform and a top platform. The ramp has a plurality of rear projections which rest on the bottom platform of the turntable and transmit to the bottom platform part of any weight on the ramp. The ramp has a central portion with an inclined surface up which the tread of the snowmobile can move and, on either side of the central portion, two side portions with coplanar inclined surfaces up which the skis of the snowmobile can slide. The inclined surfaces of the side portions are set back from the front edge of the central portion sufficiently far that as the snowmobile approaches the ramp the tread moves onto the central portion and transfers weight to the ramp and bottom platform of the turntable before the skis encounter the side portions and apply a rearward force to the ramp and turntable.

3,728,972
TENSION MEANS FOR AERIAL TRAMWAYS

Samuel P. Goforth, and Joseph A. Goforth, both of Shelby, N.C., assignors to Goforth Brothers, Inc., Shelby, N.C.

Filed May 19, 1971, Ser. No. 144,868
Int. Cl. B61b 7/14
U.S. Cl. 104—117 11 Claims

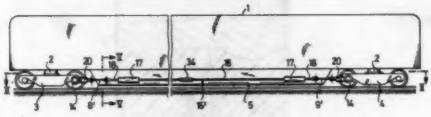


Apparatus for tensioning an aerial tramway endless cable having three or more runs or reaches such that adjacent or opposing runs diverge from a corresponding supporting pulley whose supporting carriage is biased outwardly so as to move inwardly and outwardly in accordance with variations in the load on the cable. Tracking means is provided for maintaining the diverging opposing runs in proper engagement with corresponding cable supporting roller means adjacent the pulley to ensure that the cable will not creep off of the roller means as the divergence angle of the opposing runs of the cable tends to vary coincident with the movements of the carriage.

3,728,973
RAILWAY CAR STEERING BOGIES

Hermann Hinnen, Sulz-Attikon, Switzerland, assignor to Schweizerische Lokomotir-Und Maschinenfabrik, Winterthur, Switzerland

Filed Oct. 30, 1970, Ser. No. 85,653
Claims priority, application Switzerland, July 29, 1970, 11437/70
Int. Cl. B61f 3/08, 5/44, 13/00
U.S. Cl. 105—176 12 Claims

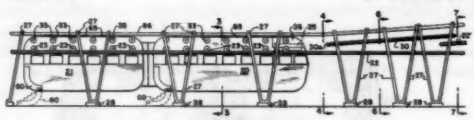


The undercarriages are coupled together by tension elements and transverse links so as to reduce the angle of approach of the leading axles of the undercarriages and the guiding forces thereon. Elastic elements can be incorporated in either the tension elements or transverse links or can be used in the connection between the transverse links and undercarriages.

3,728,974
HIGH SPEED TRAIN

Raymond Lashley, 920 South 4000 West, Syracuse, Utah

Filed Aug. 20, 1970, Ser. No. 65,630
Int. Cl. B61d 17/00
U.S. Cl. 105—329 2 Claims



A relatively low cost and economically operated high speed passenger transportation system wherein motive vehicles are coupled to provide transportation for large numbers of people. A powered main vehicle that may be one unit or more than one coupled unit is provided to travel between terminal stations and detachable passenger ferrying auxiliary vehicles are used to transport passengers and their baggage between the main vehicle and intermediate loading or unloading stations. Operation of the independently powered motive vehicles is coordinated through a computor system, sensing units on the vehicles provide signals for coupling control and specially constructed tracks and track switching insure safe operation even at very high speeds.

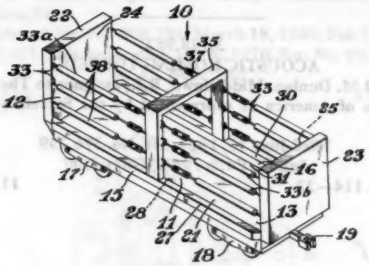
3,728,975
METHOD AND APPARATUS FOR TRANSPORTATION OF READILY DAMAGED ARTICLES

Richard Walker Jehu, Sciotoville, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Filed April 28, 1971, Ser. No. 138,089
Int. Cl. B60p 7/16; B61d 45/00
U.S. Cl. 105—369 BA 2 Claims

Readily damaged articles are shipped and transported by confining the articles in generally parallel, regular arrangement, applying a compressive force in a direction normal to the force of gravity and restricting motion in a direction generally normal to a plane containing the force of gravity and

the compressive force. The method and apparatus of the present invention are particularly suited for the shipment of



plastic foam bodies and rectangular containers having low compressive strength.

3,728,976

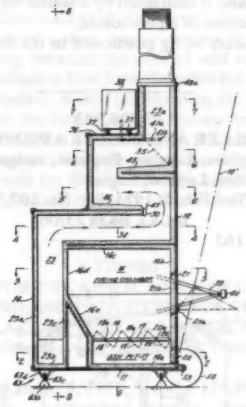
PORTABLE INCINERATOR

Irving Domnitch, 80-15 Forty-First Avenue, Elmhurst, N.Y.

Filed July 13, 1971, Ser. No. 162,195

Int. Cl. F23g *3/00*

U.S. Cl. 110—8 R **8 Claims**



Portable self-contained incinerator apparatus for upgrading the quality of pollution control in which particulate emission is significantly reduced through means for wet-scrubbing the smoke to remove particulate and other harmful material prior to the entry of the smoke into the atmosphere. The system, in addition to removing particulate, is self-cleaning. The portable nature of the device makes it useful in a wide variety of applications.

3,728,977

HOUSEHOLD RUBBISH REDUCTION SYSTEM

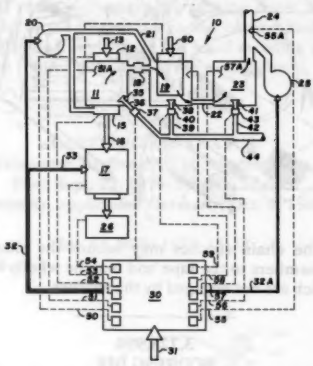
Jack D. Brannan, 9925 Nord Road, Minneapolis, Minn.

Filed Dec. 3, 1971, Ser. No. 204,431

Int. Cl. F23g *5/12*

U.S. Cl. 110—8 R **12 Claims**

Raw rubbish incineration and compaction means comprising the serial combination of a primary furnace, a mixing chamber, and afterburner for the primary furnace and mixing chamber, along with the additional combination of a compacting chamber for compaction of incinerated raw rubbish. The primary furnace receives the raw rubbish and a burner is provided for incineration. A mixing chamber provides additional air for the discharge from the primary furnace and is arranged to discharge the additional air and primary furnace gases to the afterburner. The afterburner is arranged to completely burn any combustible contained within the gaseous mixture received from the mixing chamber. The primary furnace is



provided with a grate which can be moved to discharge incinerated solids into the compacting chamber, wherein a movable wall of the compacting chamber moves into contact with the solids and crushes these solids to a predetermined pressure. Temperature control and mechanical interlock controls are provided for the system.

3,728,978

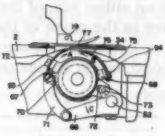
THREAD TRIMMING MECHANISM FOR SEWING MACHINES

Hidemi Honda, and Minoru Morita, both of Wakayama, Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

Filed Dec. 31, 1970, Ser. No. 103,202

Int. Cl. D05b *65/02*

U.S. Cl. 112—252 **2 Claims**



A thread trimming mechanism for sewing machines is provided which automatically cuts the thread with a pair of trimming knives secured to knive-mounting discs which move with a driving shaft rotating according to a predetermined action of a main shaft of the machine. The trimming knives engage the thread just under the eyelet-hole of the needle plate of the machine.

3,728,979

METHOD OF PRODUCING SLIDE-FASTENER STRINGERS

Helmut Heimberger, D7887 Grenzach, and Karl Griesbaum, 43 Essen-Steele, both of Germany, assignors to Opti-Holding AG, Glarus, Switzerland

Filed Nov. 27, 1970, Ser. No. 93,273

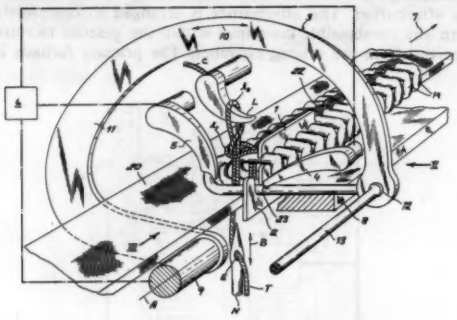
Claims priority, application Germany, Nov. 28, 1969, P 19 59 886.8

Int. Cl. D05b *3/12, 97/10, 97/12*

U.S. Cl. 112—265 **4 Claims**

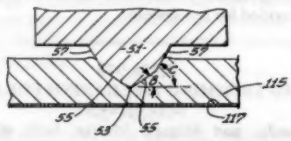
A slide-fastener stringer, especially a slide-fastener stringer half, is formed by stitching individually the turns of an endless

coupling element to a support tape with a chain stitch, each stitch being produced as each turn of the coupling element is



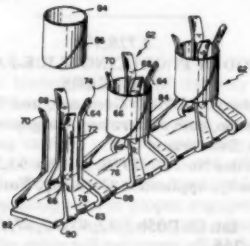
formed. The chain stitches may secure the shanks of the coupling members to the tape and may lie wholly shielded by shanks which are not engaged by the stitches.

3,728,980
SCORING DIE
Ermal C. Fraze, 355 West Stroop Road, Dayton, Ohio
Filed Feb. 10, 1971, Ser. No. 114,192
Int. Cl. B21d *51/26*; B26d *3/08*
U.S. Cl. 113—1 F **9 Claims**



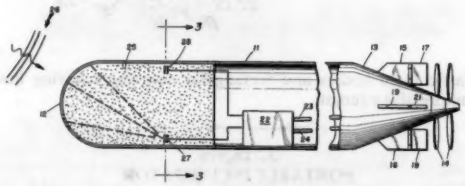
A tool for forming a score in a can end to define an easy-opening tear strip. In lateral cross section, the scoring die comprises a five-sided element having a leading edge with a very narrow planar surface, a pair of highly finished side faces extending outwardly on either side of the leading edge at first, smaller angles relative to the plane of the leading edge, and a second pair of faces extending upwardly from the highly finished faces at second, larger angles relative to the plane of the leading edge.

3,728,981
MANUFACTURING METHOD FOR CONTACT TERMINAL SOCKETS
Clarence Leonard Paullus, Lewisberry, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Division of Ser. No. 801,436, Feb. 24, 1969, Pat. No. 3,605,078. This application Aug. 4, 1971, Ser. No. 169,022
Int. Cl. B21d *53/36*
U.S. Cl. 113—119 **4 Claims**



A method of manufacturing electrical contact sockets by stamping and forming sheet metal comprises steps of blanking a strip to form two pairs of arms extending in opposite directions on each side of the strip. The arms are twisted and bent about their own longitudinal axes and are then bent adjacent to the center of the strip to define a socket.

3,728,982
ACOUSTIC HOMING TORPEDO
Richard M. Dunlap, Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 15, 1964, Ser. No. 376,299
Int. Cl. F42b *19/00*; G01v *1/00*
U.S. Cl. 114—23 **11 Claims**

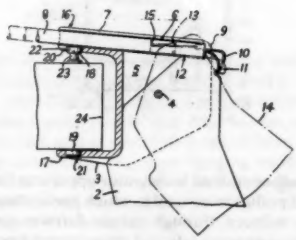


11. The device of claim 8 wherein the velocity of sound transmission in the explosive material is substantially equal to the velocity of sound transmission in seawater,

the rear surface of the explosive material has the shape of a parabola and is contacted by a sound wave reflector having the contour of a paraboloid,

said transducers being positioned in the focal plane of the reflector.

3,728,983
TILLER AND RUDDER ASSEMBLY
Michael J. Ingham, London, England, assignor to Richmond Marine Limited, London, England
Filed Feb. 8, 1971, Ser. No. 107,769
Int. Cl. B63h *25/06*
U.S. Cl. 114—162 **13 Claims**



A marine craft steering assembly including a steering tiller and a rudder blade which are interconnected so that the rudder blade can be raised and lowered by longitudinal movement of the tiller the rudder blade being pivoted to a rudder stock in which the steering tiller is supported and can slide.

ERRATUM

For Class 115—24 see:
Patent No. 3,729,369

3,728,984
Patent Not Issued For This Number

3,728,985

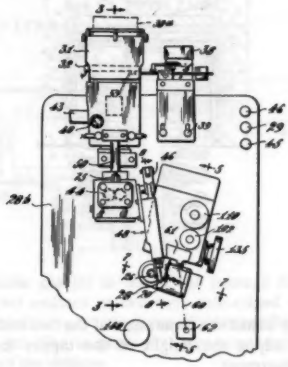
ADHESIVE APPLICATOR FOR LASTING MACHINE

Robert B. Dunlap, Medway, and Ewald O. Peterson, Lynnfield, both of Mass., assignors to Compo Industries, Inc., Waltham, Mass.

Division of Ser. No. 808,286, March 18, 1969, Pat. No. 3,561,027. This application July 6, 1970, Ser. No. 60,975

Int. Cl. B05c 5/02

U.S. Cl. 118—2 5 Claims



In a lasting machine of the kind in which a pair of rolls turning in opposite directions apply lasting and feeding stresses to the lasting margin of a shoe, improvements in means for adjusting the spacing between the axes of said rolls, means for controlling the adhesive flow from the adhesive nozzle, the adhesive delivery system, means for adjusting the position of the nozzle relative to the lasting margin, means for adjusting the axis of a rotary wiper at right angles to the axes of said rolls and means for resiliently urging the operative surface of a wiper blade towards the bite of said rolls whereby it is self-adjusting to accommodate different thicknesses of the last margin.

3,728,986

MACHINE FOR THE APPLICATION OF GLUE TO A RUNNING BAND AND THE CUTTING OF THE BAND AT THE PLACE OF THE GLUE APPLICATION

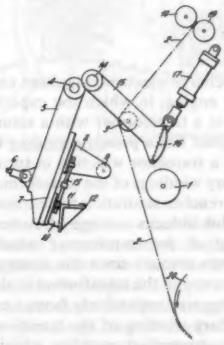
Oskar Brovoll, Oslo, Norway, assignor to Thune-Eureka A/S, Oslo, Norway

Filed June 25, 1971, Ser. No. 156,901

Claims priority, application Norway, April 30, 1971, 1618/71

Int. Cl. B05c 1/08, 1/16

U.S. Cl. 118—41 2 Claims



A glue application and cutting means for a running band is disclosed, the running band being used for the wrapping of large rolls of paper. The running band is brought in contact with a glue applying roller by means of a pressure roller pivotably mounted at a distance ahead of the glue applying roller in a swinging frame. A cutting knife is mounted on the frame between the pressure roller and the glue applying roller, whereas a striking beam is mounted in a second swinging frame on the other side of the band relative to the cutting knife. By its strike movement the striking beam will hit the running band in the area between the cutting knife and the pressure roller, thereby cutting the band avoiding glue application on the trailing edge area of the running band.

3,728,987

LABELING APPARATUS

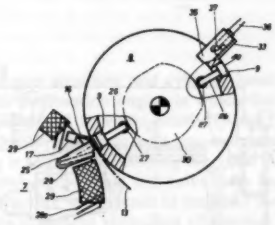
Hermann Kronseder, Berliner Str. 10, Neutraubling, Germany

Filed Sept. 22, 1970, Ser. No. 74,405

Claims priority, application Germany, Oct. 4, 1969, P 19 50 149.6

Int. Cl. B05c 1/02, 11/12

U.S. Cl. 118—62 5 Claims



The labeling apparatus has a source of labels, a gripping turret with mechanical gripping elements that withdraw labels from the label source and fly the labels against the glue retaining surface of a gluing drum, en route to apply the labels to containers. The mechanical grippers are so arranged as to grip only the leading edges of the labels. There is a space between the glue drum and the gripper turret so that label portions trailing their gripped leading edges fly in said space in unsupported relation to the turret. Optional air jet nozzles may blow the flying label portions against the glue drum. The glue drum is provided directly with a doctor blade which spreads glue onto a uniform film on the drum. The drum is provided with recesses to receive the mechanical gripping elements below the glue drum surfaces as the gripping elements sweep past the drum.

3,728,988

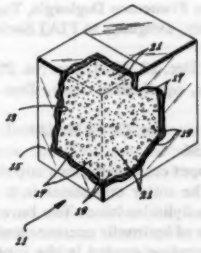
MARINE LIFE STORAGE HABITAT MEDIUM AND SHIPPING METHOD

Wallace H. Shapero, Torrance, and Albert Cane, Inglewood, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 22, 1971, Ser. No. 108,832

Int. Cl. A01k 61/00

U.S. Cl. 119—2 5 Claims



Marine life, such as live brine shrimp, are stored in an aqueous habitat medium including a unitary oxygen-releasing, car-

bon dioxide-diminishing agent, namely sodium perborate, during shipment in containers, either open or closed, to extend the time the marine life may be maintained in a given amount of the aqueous medium.

3,728,989

CONTROL SYSTEM FOR THE INJECTION OF FUEL INTO INTERNAL COMBUSTION ENGINES

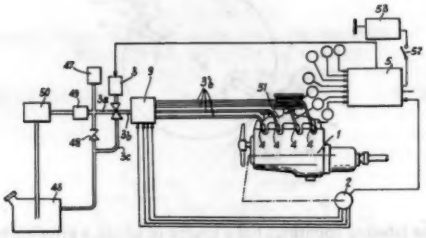
Louis A. Monpetit, L Etang la Ville; Jurg V. Schneider; Herve Gueret, both of Versailles; Pierre Advenier, Paris; Georges R. Sallot, Elizabethville; Jean-Pierre Paul Jourde, Villennes S/Sienne, and J. W. Ufnaleski, Mantes la Ville, all of France, assignors to Societe Des Procedes Modernes D'Injection Sopromi, Les Mureaux, France

Filed April 21, 1971, Ser. No. 135,963

Claims priority, application France, April 22, 1970, 7014583

Int. Cl. F02m *39/00*

U.S. Cl. 123—32 EA **10 Claims**



In order to obtain constancy of throughput for the different injectors of an internal combustion engine, the valve is inserted between a supply of fuel and the mechanical injectors is a three way valve connected respectively with the output of the supply, with the injectors possibly through a sequential distributor and with a return to the supply. An electromagnet controlled by electric signals attracts a piston normally connecting the supply output with the return to the supply so as to connect during the desired period the supply output with the injector systems. The three ways of furthermore transiently interconnected at the beginning and at the end of each energization, so as to prevent excess pressure.

3,728,990

HYDRAULIC TAPPETS FOR INTERNAL COMBUSTION ENGINES

Aurelio Lampredi, Turin; Aldo Leoni, Cavoretto; Francesco Ghilardi, Turin; Francesco Degiorgis, Turin, and Luigi Joli, Turin, all of Italy, assignors to FIAJ Societa per Azioni, Turin, Italy

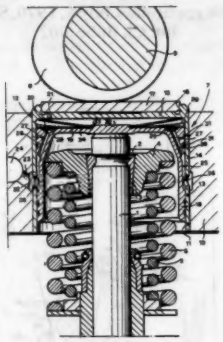
Filed Dec. 13, 1971, Ser. No. 207,068

Claims priority, application Italy, Dec. 22, 1970, 71258 A/70

Int. Cl. F01l *1/24*

U.S. Cl. 123—90.56 **6 Claims**

A hydraulic tappet comprising two cup shaped parts one inside the other. The outer cup slides in a bore in a housing which may be the cylinder head. The bore has a groove connected to a source of hydraulic pressure and the groove is connected to a cooperating groove in the inner cup *via* holes in the outer cup. The two end walls of the cups define a chamber within which there is a non-return valve formed of a flat spring plate held in the middle so that its edges can flex to uncover the openings to passageways which communicate with the groove in the inner cup to admit hydraulic fluid which acts to



automatically adjust the separation of the two end walls of the chamber to adjust the height of the tappet for automatic clearance adjustment.

3,728,991

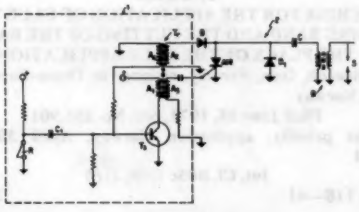
CAPACITIVE DISCHARGE IGNITION CIRCUIT

Mario Montuschi, and Mario Palazzetti, both of Turin, Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Oct. 6, 1970, Ser. No. 78,519

Int. Cl. F02p *3/06*

U.S. Cl. 123—148 E **5 Claims**



A capacitive discharge electronic ignition circuit for an internal combustion engine, in which the capacitor is charged from the battery via a transformer with a saturable magnetic core. The transformer has a primary winding in a power circuit controlled by a transistor which is in turn controlled by one of the secondary windings of the transformer so that when the magnetic core reaches saturation the current to the primary switches off. This induces a surge of current in a further secondary winding of the transformer which charges the capacitor by a given amount since the energy stored in the saturable magnetic core of the transformer is always the same. The transistor is triggered repetitively from a contact breaker and a third secondary winding of the transformer supplies a firing signal for a controlled rectifier which controls the discharge of the capacitor into the high voltage coil to provide the spark.

3,728,992

ADJUSTABLE JET AND ITS APPLICATION IN AN APPARATUS FOR RECYCLING THE EXHAUST GASES OF AN INTERNAL COMBUSTION ENGINE

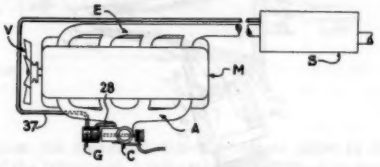
Bernard Bertrand, 78 Aubergenville, and Claude Lesueur, 95 Argenteuil, both of France, assignors to Automobiles Peugeot and Regie Nationale Des Usines Renault, Billancourt, France

Filed Oct. 7, 1971, Ser. No. 187,436

Claims priority, application France, Oct. 13, 1970, 7036959; Jan. 29, 1968, 68137750

Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A 7 Claims



An adjustable gas jet in which the passage for the gas is defined by two orifices in two very thin-edged walls one of which is rotatable by a rotary member extending out of the body of the jet. The section of the passage depends on the overlapping of the orifices.

The jet is employed in an exhaust gas recycling conduit for a combustion engine which puts the exhaust pipe in communication with the induction pipe of the engine.

3,728,993

FUEL INJECTION APPARATUS INCLUDING AN AIR SENSOR AND MEANS FOR THE DIRECTION-DEPENDENT DAMPING OF ITS MOVEMENT

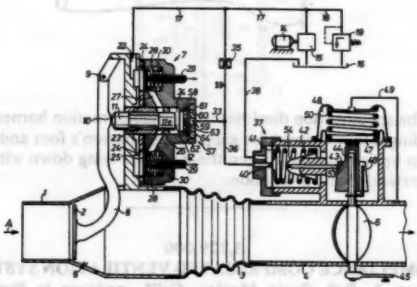
Konrad Eckert, Stuttgart-bad Cannstadt; Heinrich Knapp, Leonberg-Silberberg; Wilfried Sautter, Stetten I.R., and Volkhard Stein, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 16, 1971, Ser. No. 208,699

Claims priority, application Germany, Dec. 17, 1970, P 20 62 078.4

Int. Cl. F02m *69/00*

U.S. Cl. 123—119 R 7 Claims



In a fuel injection apparatus — in which the air-fuel ratio is maintained constant by an air sensor displaceable in the suction tube by the intake air drawn into the internal combustion engine with which the fuel injection apparatus is associated — in order to prevent undesired shifts in the metered fuel quantities in the low rpm range, the pressurized liquid used as a return force for the air sensor passes through a throttle assembly which throttles the liquid flow to an extent dependent upon the direction of flow therethrough.

3,728,994

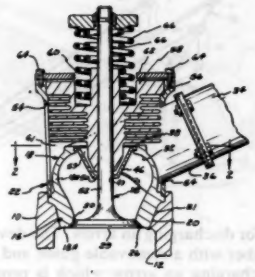
EXHAUST PORT STRUCTURE

Carl F. Bachle, Grosse Pointe Farms, Mich., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Aug. 18, 1970, Ser. No. 64,782

Int. Cl. F01p *1/08*; F01l *3/00*; F01p *3/14*

U.S. Cl. 123—188 GC 14 Claims



An exhaust port structure and cylinder head construction for an internal combustion engine in which the exhaust port structure is permitted to attain relatively high temperatures while the exhaust valve and seat are maintained relatively cool. Cooling is achieved by cooling the valve guide structure and overheating of the valve and valve stem is prevented by providing a structure which tends to maintain the valve and its seat in proper alignment regardless of thermal and pressure distortions.

3,728,995

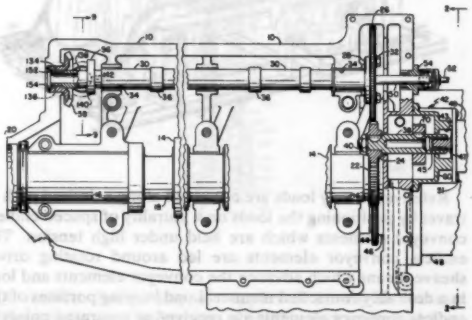
ACCESSORY ARRANGEMENT FOR A RECIPROCATING INTERNAL COMBUSTION ENGINE

George R. Schramm, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Oct. 1, 1971, Ser. No. 185,519

Int. Cl. F01m *11/02*; F02b *77/00*

U.S. Cl. 123—195 A 10 Claims



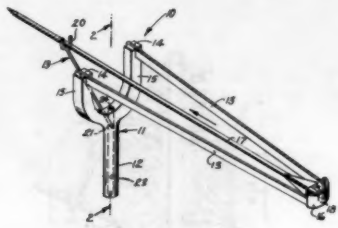
The disclosure illustrates a reciprocating internal combustion engine where the idler gear between the crankshaft and camshaft gears drives an oil pump. A magneto drive gear also meshes with the crankshaft gear. A fuel pump and propeller governor are driven from the forward end of the camshaft. This greatly reduces the number of gears required for the accessory drive train. A few simple modifications enable the oil pump to deliver oil to the engine for forward or reverse engine rotation.

3,728,996

CROTCH TYPE ELASTIC BAND PROJECTING DEVICE

Norman S. Miller, Rt. 1, Box 142, Aliquippa, Pa.

Filed April 20, 1971, Ser. No. 135,723
Int. Cl. F41b 7/00
U.S. Cl. 124—20 B 1 Claim



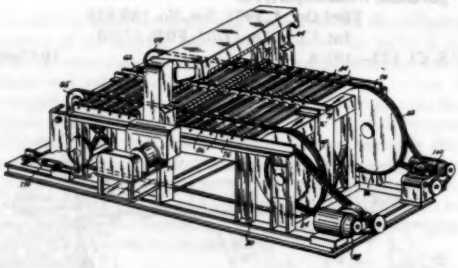
A device for discharging an arrow. The device includes a Y-shaped member with a removable guide and sight rod for accurately discharging an arrow which is propelled by elastic band members, the Y-shaped member having a leg with a longitudinal opening therethrough, and a forwardly, upwardly diagonal opening for selectively receiving the guide and sight rod either in a stored away or arrow shaft supporting position respectively.

3,728,997

APPARATUS FOR CUTTING STONE

Ralph A. Fletcher, Bedford, N.H., and Joseph R. Oliver, Lowell, Mass., assignors to H. E. Fletcher Co., Westford, Mass.

Division of Ser. No. 63,159, Aug. 12, 1970. This application Sept. 24, 1971, Ser. No. 183,600
Int. Cl. B28d 1/32
U.S. Cl. 125—23 C 2 Claims



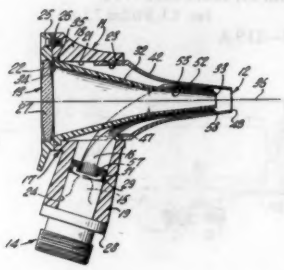
Relatively heavy loads are conveyed along a desired path of travel by positioning the loads on a plurality of spaced endless conveyor elements which are held under high tension. The endless conveyor elements are led around rotating driver sheave means which advance the conveyor elements and load in a desirably controlled manner. Load bearing portions of the endless conveyor elements are received at separated points in rolling contact with separated roller supporting surfaces. The method of conveying and the apparatus devised for carrying out the method are useful especially in handling relatively large blocks of stone such as granite, and particularly where the blocks are required to be processed in a cutting machine of the guillotine type in which a set of aligned cutting elements are moved up and down in a common plane of reciprocating movement to cut up the block into dimension stone pieces of uniform size. The endless conveyor elements may be selectively controlled to guide and position the block during and after each cutting operation.

3,728,998

OTOSCOPE

Helmut A. Heine, Herrsching/Obb, Germany, assignor to Optotechnik G.m.b.H., Germany and Propper Manufacturing Company, Inc., Long Island City, N.Y.

Filed Jan. 26, 1971, Ser. No. 108,704
Int. Cl. A61b 1/22
U.S. Cl. 128—9 4 Claims



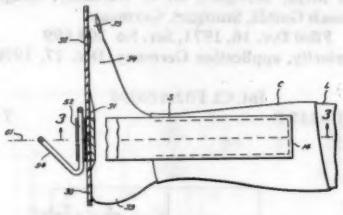
An improved otoscope construction utilizing fiber optics light transmission in which the fiber optic-carrying portion is fabricated as a separate and unitary member for assembly with additional component parts which, when combined, form an otoscope head.

3,728,999

DISPOSABLE TRACTION HARNESS

Stanley E. Thompson, 1108 Morton Street, Richmond, Tex.

Filed Nov. 23, 1970, Ser. No. 91,815
Int. Cl. A61f 5/04
U.S. Cl. 128—84 R 2 Claims



The specification discloses a disposable traction harness including a foot support for supporting a person's foot and toes in an upright position when the person is lying down with his leg extended and in traction.

3,729,000

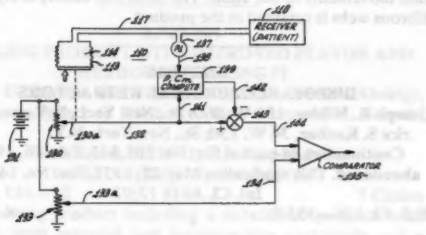
COMPLIANCE COMPENSATED VENTILATION SYSTEM

Steven A. Bell, Santa Monica, Calif., assignor to Puritan-Bennett Corporation, Kansas City, Mo.

Filed May 18, 1971, Ser. No. 144,521
Int. Cl. A62b 7/00
U.S. Cl. 128—145.6 17 Claims

A method and apparatus for maintaining the volume of gas delivered to a patient by a volume-limited ventilator substantially constant, regardless of changes in the delivery pressure which induce corresponding changes in the compression of the gas and the size of various machine elements in the delivery system such as the delivery tubing and the ventilator bellows. The delivery pressure to the patient is monitored and

is used to compute, together with ventilator machine compliance, a compliance compensation volume, i.e., the volume trapped within the machine dead space, which is first subtracted from the measured delivery volume prior to comparison of the latter with a reference proportional to desired delivery volume, to effect ventilator machine control for terminating further volume delivery.



3,729,001

MEDICAL RESPIRATORS

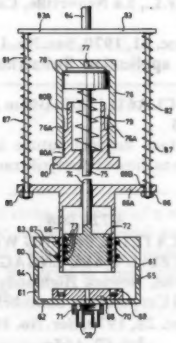
John Andrew Bushman, Cambridge, England, assignor to Pye Limited, Cambridge, England

Filed Jan. 29, 1970, Ser. No. 6,846

Claims priority, application Great Britain, Jan. 30, 1969, 5,108/69

Int. Cl. A61m *17/00*

U.S. Cl. 128—188 **10 Claims**



A liquid injector for use in a medical respirator having a cylinder mounted for movement within a cavity. The cavity has a supply of liquid thereto and as the cylinder moves therethrough, it entraps a quantity of liquid within the cylinder at the point when it is sealed against a closure within the cavity. A member is mounted for movement within the cylinder so that when the cylinder is moved against the closure, the member will be forced to move so as to eject the liquid entrapped therein into the stream of gas.

3,729,002

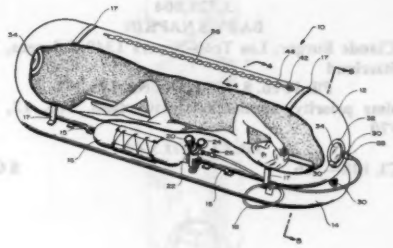
EMERGENCY INFLATABLE RECOMPRESSION UNIT

Donald Miller, P.O. Box 543, Kailua, Hawaii

Filed April 1, 1971, Ser. No. 130,140

Int. Cl. A61m *16/02*

U.S. Cl. 128—204 **6 Claims**



A portable recompression chamber comprising a flexible container constructed of a high-strength pressure-proof rubber-coated fabric which occupies a small space when collapsed and may be easily transported and inflated for use. Entrance to the chamber is through a long zippered opening.

3,729,003

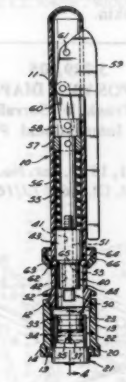
VARIABLE DOSAGE AMPOULE APPLICATOR

Alfred A. Hurschman, Hudson, Ohio, assignor to Ampoules, Inc., Hudson, Ohio

Filed Feb. 11, 1971, Ser. No. 114,423

Int. Cl. A61m *5/20, 5/28*

U.S. Cl. 128—218 DA **5 Claims**



A variable dosage ampoule applicator having an external adjustment to vary the amount of medicament expressed from a medicament-containing ampoule contained within the applicator. The applicator has a hollow body with an ampoule mounting sleeve adjustably threaded to one end of the body. The ampoule is removably inserted within the sleeve and includes a cylindrical sidewall closed at one end by a slidable plunger and at the other end by a pierceable diaphragm. A hollow needle disposed within the medicament chamber is fixed to the plunger with its pointed end directed toward the pierceable diaphragm. The applicator includes a force-applying head to depress the ampoule plunger. The force-applying head has a fixed preselected stroke between a retracted posi-

tion and an extended position. By adjusting the ampoule mounting sleeve, and therefore the ampoule, relative to the stroke of the force-applying head, the degree of depression of the ampoule plunger may be varied to thereby vary the volume of medicament injected into the patient by actuation of the force-applying head from its retracted position to its extended position.

3,729,004

BABY'S NAPKIN

Guy Claude Burger, Les Trois-Noyers 1349 Eclepens, Vaud, Switzerland

Filed Feb. 8, 1971, Ser. No. 113,241

Claims priority, application Switzerland, Feb. 12, 1970, 2022/70

Int. Cl. A61f *5/44*

U.S. Cl. 128—286 **8 Claims**

The invention concerns a napkin to be thrown away which comprises a backing and a first impervious layer, both being provided with two apertures and located against an absorbing layer. A second impervious layer is provided in order to house this absorbing layer between said first and second impervious layers. Furthermore, the backing is provided with lateral recesses so as to conform closely to the shape of the body and around legs of a baby in order to ensure tightness between the baby's body and the napkin.

3,729,005

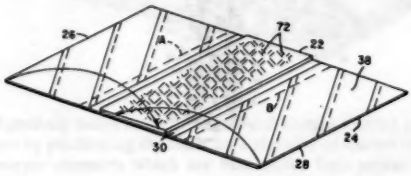
DISPOSABLE DIAPER

Charles A. Lee, and Frank D. Sorrells, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111.229

Int. Cl. A61f *13/16*

U.S. Cl. 128—287 **15 Claims**



A disposable diaper of generally rectangular outline having longitudinal and transverse directions including a pad of absorbent matter encompassed by a cover sheet comprising a laminated nonwoven fibrous fabric including fibrous web plies having respective longitudinal directions, the web plies being reinforced in their respective longitudinal directions and bonded in superposed relation with their respective longitudinal directions at angle to each other and at angle to the longitudinal direction of the diaper thereby reinforcing the diaper at angles to its longitudinal and transverse directions. The diaper includes wing folds extending longitudinally along the side edges of the diaper to provide a seal around the legs of the child and prevent body exudate from passing outwardly of the diaper in the vicinity of the legs. In one aspect of the inveniton, fibers of the web plies are bonded to the reinforcing medium in a manner such that the fibers are retained in the fabric cover sheet and do not become dislodged to deposit upon the child or other surface even though the diaper becomes wet and is subected to abrasion in the course of normal movements of the child. The desirable absorptivity of the fibrous webs is retained in the product.

3,729,006

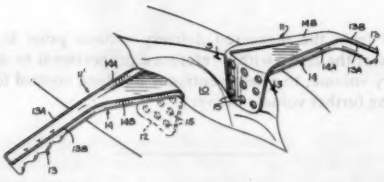
DISPOSABLE SURGICAL RETRACTORS

Joseph R. Wilder, 151 W. 86th St., New York, N.Y., and Maurice S. Kanbar, 34 W. 13th St., New York, N.Y.

Continuation-in-part of Ser. No. 802,343, Feb. 26, 1969, abandoned. This application May 27, 1971, Ser. No. 147,387

Int. Cl. A61b *17/02*

U.S. Cl. 128—303 R **6 Claims**



A hand-held surgical retractor fabricated of resilient plastic material, the retractor being light-weight, glare-free and functionally superior to existing metallic instruments. The retractor includes a non-skid blade whose inner surface is slightly concave, the blade having an array of circular apertures therein whereby when the blade is pressed against tissue, the tissue bellies into the blade to provide a contact therebetween which resists displacement even when low pulling forces are exerted on the retractor.

3,729,007

RESORBABLE SURGICAL SUTURE

Velimir Mirkovitch, Pully, Switzerland, assignor to SUTRAMED S.a.r.L., La Neuveville, Canton of Bern, Switzerland

Filed Dec. 21, 1970, Ser. No. 100,451

Claims priority, application Switzerland, Dec. 26, 1969, 19216

Int. Cl. A61l *17/00;* **D06m** *3/02*

U.S. Cl. 128—335.5 **2 Claims**

A resorbable catgut surgical suture impregnated with a liquid silicone, such as dimethylpolysiloxane.

3,729,008

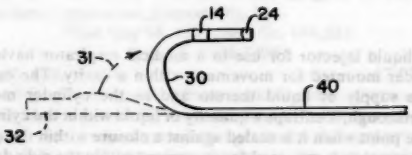
ELECTRODE FOR ATRIAL PACING WITH CURVED END FOR ATRIAL WALL ENGAGEMENT

Barough V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Dec. 28, 1970, Ser. No. 101,836

Int. Cl. A61n

U.S. Cl. 128—418 **9 Claims**



A curvilinear electrode suitable for being curved-over and supported by a moving atrium wall of a patient's heart. The

electrode includes at least one long, thin, flexible electrical conductor encapsulated by an electrically insulating flexible catheter sleeve. The electrode has a sufficient resilience to maintain the curve in a plane and yet allow the curve to be flexed linear for insertion through a blood vessel of the patient.

3,729,009

SMOKING PRODUCT WITH IMPROVED FLAVOR AND METHOD OF MAKING IT

Chester U. Stevens, and William A. Selke, both of Stockbridge, Mass., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed March 22, 1971, Ser. No. 126,967
Int. Cl. A24b *03/14, 15/04, 03/12*
U.S. Cl. 131—17 **7 Claims**

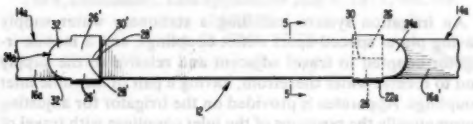
A smoking product including a substantial proportion of tobacco stem material and incorporating carbamide and a saturated fatty acid composition having a carbon chain length of 16–18. The carbamide is present in an amount from 1.0 to 3.0 percent and the fatty acid is present in an amount of from 1.0 to 4.0 percent, by weight, of the stem material. The carbamide and fatty acid impart to the stem material, when it burns, some of the more pleasant taste and smell characteristics of burning tobacco leaf. The stem material may be in its natural state, but crushed, or it may be made into a reconstituted sheet or film.

3,729,010

CHIN STRAPS FOR CAPS AND THE LIKE

Paul G. Gallin, 729 Broadway, New York. N.Y.

Continuation of Ser. No. 791,664, Jan. 16, 1969, abandoned. This application April 28, 1971, Ser. No. 138,329
Int. Cl. A42b *7/00*
U.S. Cl. 132—58 **1 Claim**



The adjustable chin strap assembly of a military or like cap is formed of synthetic resinous material and each portion of the strap is moulded of a single piece of material to obviate the expensive operations involved in constructing chin straps of conventional materials.

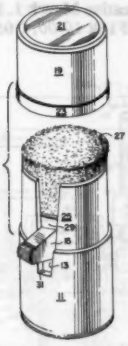
3,729,011

LOOSE POWDER DISPENSER

Joseph Gleicher, Bayville, N.Y., assignor to Avon Products, Inc., New York, N.Y.

Filed April 19, 1971, Ser. No. 135,234
Int. Cl. A45d *33/02*
U.S. Cl. 132—83 B **6 Claims**

A loose powder dispenser having a cylindrical openended chamber for containing powder to be dispensed with the chamber being capped by an apertured cover which supports a powder puff for applying the powder material. A knurled button integral with the chamber extends through the housing of the dispenser and is slidable with respect thereto for exposing the powder puff for dispensing the powder. A cap slides



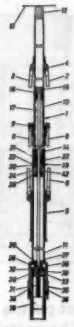
over a recessed portion of the housing and is secured thereto by a force fit and inhibits movement of the knurled button when powder is not being dispensed.

3,729,012

SELF-CLOSING UMBRELLA

Heinz Weber, Rhineland, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Jan. 25, 1971, Ser. No. 109,307
Claims priority, application Germany, Jan. 24, 1970 P 20 03 250.2
Int. Cl. A45b *19/00*
U.S. Cl. 135—25 **5 Claims**



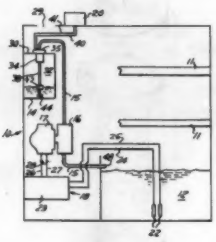
A self-closing umbrella wherein there are two telescopic stick portions, a crown at the end of one stick portion with the dome ribs hinged thereto, a secondary crown fixed to the free end of the other telescopic stick portion, a runner adapted to slide on the other stick portion with stretcher means extending to the dome ribs and struts hinged to the stretcher means and to the second crown. A tension spring is arranged between the two telescopic stick portions so that when the umbrella stick is telescoped together, the dome ribs are opened and the tension spring is loaded. When the spring is released, the telescopic stick extends to its fullest extent and the dome ribs are closed on the stick.

3,729,013

LIQUID LEVEL CONTROL DEVICE

Howard L. Anderson, Wyandotte, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 807,609, March 17, 1969, Pat. No. 3,595,267. This application March 1, 1971, Ser. No. 119,901
Int. Cl. F16k 19/00; G05d 11/08
U.S. Cl. 137—93 2 Claims



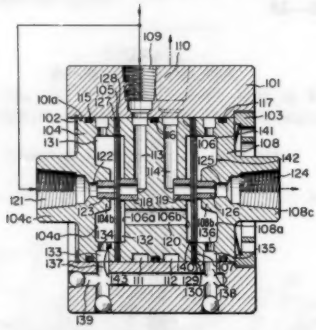
A liquid level control device, adapted for use with apparatus for dispensing fluid from a reservoir to a drum or tank, that includes a conduit and an electrical relay encased in a tubular housing and disposed in the reservoir. The conduit is operable to deliver a stored fluid from the reservoir to the drum of a dispensing machine or the like and the relay is responsive to the level of liquid in the reservoir and connected to means for indicating when the liquid falls below a desired level.

3,729,014

FLOW DIVIDER

Tadataka Narumi, Kariya, Japan, assignor to Toyoda Machine Works, Ltd., Kariya-shi, Aichi-ken, Japan

Filed Feb. 3, 1971, Ser. No. 112,233
Claims priority, application Japan, Feb. 7, 1970, 45/10920
Int. Cl. G05d 11/00
U.S. Cl. 137—101 4 Claims



A low divider has an inlet port, a pair of outlet ports, and a control chamber therein. The control chamber is separated by a diaphragm into a pair of sub-chambers. Restriction orifices are provided between the inlet port and the pair of sub-chambers and valve seat members are provided between the pair of sub-chambers and the outlet ports and have throttling effects between the valve seat members and the diaphragm.

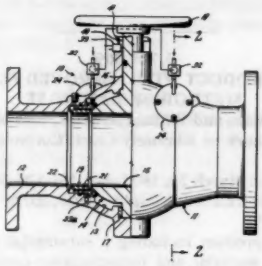
3,729,015

VALVE WITH SEAT ROTATING MEANS

John P. Oliver, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Dec. 29, 1971, Ser. No. 213,410
Int. Cl. F16k 29/00
U.S. Cl. 137—330 11 Claims

A valve having a seat which is caused to rotate about its axis between different rotational positions by power means which is independent of the power means by which the closure member is moved between opened and closed positions. Operation of the power means for rotating the seat may be initiated by means automatically responsive to movement of the closure member into a predetermined position or by means independent of movement of the closure member.

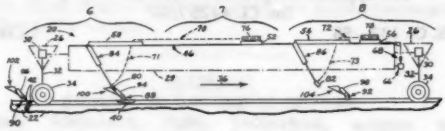


3,729,016

APPARATUS FOR PRODUCING A FLUID-FLOW CONNECTION BETWEEN RELATIVELY MOVABLE STATIONARY AND MOBILE CONDUIT SYSTEMS

Carl V. Von Linsowe, San Jose, Calif., assignor to John T. Page, Portland, Oreg., a part interest

Continuation of Ser. No. 14,455, Feb. 26, 1970, abandoned. This application June 1, 1971, Ser. No. 149,032
Int. Cl. B05b 9/02; E01h 3/02
U.S. Cl. 137—344 32 Claims



An irrigation system including a stationary water supply having plural spaced-apart outlet couplings, and a mobile irrigator adapted to travel adjacent and relative to the supply and to receive water therefrom, having a pair of movable inlet couplings. Apparatus is provided on the irrigator for adjusting automatically the positions of the inlet couplings with travel of the irrigator, whereby with one inlet coupling connected to an outlet coupling, the other inlet coupling advances toward a ready-to-connect position relative to the next adjacent outlet coupling in the direction of irrigator travel. Such apparatus promotes successive fluid-flow connections between the supply and irrigator with the latter traveling relative to the former, and with the outlet couplings in the stationary supply spaced close enough, promotes a continuous fluid-flow connection between the supply and irrigator.

3,729,017

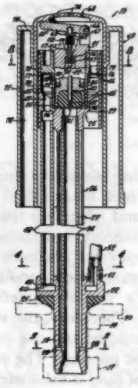
FLOW-CONTROL DEVICE

Anthony R. Brandelli, 2418 W. 256th St., Lomita, Calif.

Continuation of Ser. No. 726,164, May 2, 1968, abandoned. This application Sept. 21, 1970, Ser. No. 73,882
Int. Cl. F16k 31/18
U.S. Cl. 137—414 5 Claims

A flow-controlling device that includes a housing having a chamber therein, a fluid inlet connected to the chamber, a first valve member in the chamber controlling flow through the inlet, the chamber having an outlet through which fluid discharges when the first valve member is moved in one direction, a pin extending through an opening in the first valve

member and aligned with a second valve member in a second outlet for the chamber, a lever movable for opening the second valve member when the float drops, whereby the pressure in the chamber above the first valve member is relieved to



allow the fluid pressure from the inlet to open the first valve member. When the float is raised, water can flow past the pin to pressurize the chamber interiorly and move the first valve member to a closed position.

3,729,018

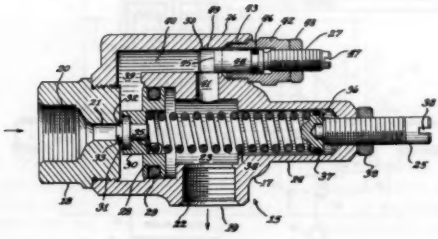
UNLOADER VALVE FOR SPRAY GUNS

Ted Lee Butterfield, Naperville, Ill., assignor to Spraying Systems, Co., Wheaton, Ill.

Continuation-in-part of Ser. No. 55,319, July 6, 1970, abandoned, which is a continuation of Ser. No. 797,196, Feb. 6, 1969, abandoned. This application July 6, 1971, Ser. No. 160,014

Int. Cl. F16k *17/20*

U.S. Cl. 137—469 **9 Claims**



An unloader type valve for spray guns supplied from pumps to limit operating pressures of the pump when the spray gun is stopped. The valve utilizes an adjustable spring to select pressure forces for opening the valve and a variable flow passage from the valve to an outlet when the valve is open, the allowing matching of the valve to the precise operating pressures and flow rates in spray gun and pumping system installations.

3,729,019

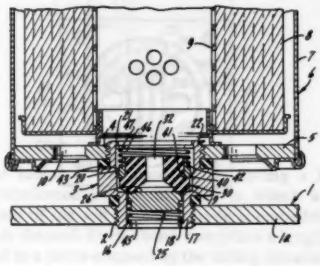
BI-DIRECTIONAL CHECK VALVE

Walter J. Kudlaty, Elmhurst, Ill., assignor to Marvel Engineering Company, Chicago, Ill.

Filed March 10, 1971, Ser. No. 122,937

Int. Cl. F16k *17/26*

U.S. Cl. 137—493.6 **3 Claims**



A connector joins a filter to a reservoir, the connector containing vacuum and pressure release elements entirely therewithin, the release elements including chatter-preventing configurations.

3,729,020

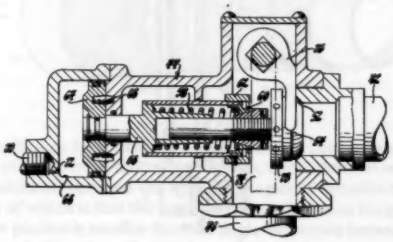
PRESSURE RELIEF AND DRAIN VALVE

Ludvik F. Koci, 917 N. Waiola Avenue, La Grange Park, Ill., and Humberto Suarez, 310 Lathrop, Forest Park, Ill.

Division of Ser. No. 33,319, April 30, 1970, Pat. No. 3,621,907. This application April 26, 1971, Ser. No. 137,280

Int. Cl. F16r *15/06, 17/04*

U.S. Cl. 137—522 **2 Claims**

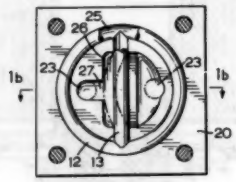


A locomotive cooling system has radiators mounted above the normal coolant level during engine shutdown in the engine and water tank so as to drain the radiators when the engine stops to avoid the possibility of freezing the water therein. An automatic pressure relief and overflow valve is provided which is open during engine shutdown to drain excess water from the cooling system so as to prevent the retaining of any coolant in the radiators. When the engine is operating, the valve is normally closed by engine lubricating oil pressure to permit normal pressure buildup in the engine cooling system. However, the valve opens to relieve excess pressure in the cooling system. Manual opening means are also provided to relieve system pressure during engine operation.

3,729,021
HIGH-PRESSURE PUMP AND CHECK-VALVE

Frederick Harold Humphrey, Markham, Ontario, Canada, assignor to Polypump Curacao N.V., Willemstad Curacao, Netherlands Antilles

Filed Sept. 16, 1971, Ser. No. 181,046
Int. Cl. F16k *15/14*
U.S. Cl. 137—525 4 Claims

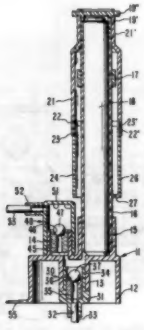


A high-pressure pump or check-valve in which solid tubular flexible members cooperate with slot-like openings in pressure chambers to provide one-way valves. The usual inlet and outlet ports are also provided.

3,729,022
DISASSEMBLEABLE VALVE AND LIQUID DISPENSING DEVICE

William J. Roach, Foster City, Calif., assignor to Oxford Laboratories, San Mateo, Calif.

Filed Jan. 4, 1971, Ser. No. 103,708
Int. Cl. F16k *15/04*
U.S. Cl. 137—533.15 3 Claims

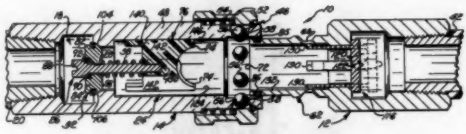


A disassembleable valve is disclosed wherein a hollow glass insert having a circular sealing surface on one end for sealing the passage therethrough is positioned within a tubular plastic member, and a precision spherical ball of a diameter to establish a seal at the insert sealing surface is captured for forming the seal. A liquid dispensing device is provided with a disassembleable valve and includes a cap structure adapted to be secured onto the top of a liquid container and provided with integral tubular sleeve forming a tubular portion of the valve and with a syringe mounted on the cap for moving fluid through the valve. The syringe has a ring on the outside surface of the barrel and a shroud connected to the syringe piston movable within limits set by the ring. The cap has inserts for different shaped fluid containers and a stabilizing stand.

3,729,023
COUPLING ASSEMBLY

Harry H. Hammond, Middleburg Heights, Ohio, assignor to The Hansen Manufacturing Company, Cleveland, Ohio

Filed Jan. 26, 1972, Ser. No. 220,774
Int. Cl. F16l *29/00*
U.S. Cl. 137—614.03 14 Claims

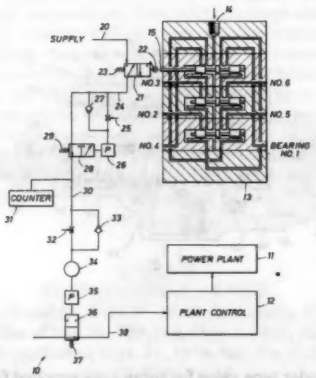


An improved coupling includes a shut-off and velocity control valve assembly which blocks fluid flow upon disconnection of the coupling and whenever the velocity of fluid flow through the coupling exceeds a predetermined rate. The shut-off and velocity control valve assembly includes a main valve which is operated from an open condition to a closed condition in response to a predetermined pressure differential across the main valve. Therefore, the main valve closes when the coupling is disconnected and one side of the main valve is exposed to atmospheric pressure. The main valve also closes if an excessive amount of fluid is exhausted due to a rupturing of a conduit or a malfunction of equipment associated with the coupling. A pilot valve effects operation of the main valve to the open condition upon connection of the coupling by enabling fluid to flow from a high pressure side to a low pressure side of the main valve to thereby reduce the pressure differential across the main valve. Full flow is re-established through the main valve upon opening of the main valve by a biasing spring after the pressure differential across the main valve has been reduced.

3,729,024
MONITORING APPARATUS RESPONSIVE TO OPERATION OF COOPERATIVE EQUIPMENT AT MORE THAN A PREDETERMINED RATE

Robert S. Harrah, 4108 DuPont, Houston, Tex.

Filed Oct. 14, 1970, Ser. No. 80,681
Int. Cl. G05b *19/44*
U.S. Cl. 137—624.13 9 Claims



For cooperation with an apparatus which must function periodically in a manner which is manifested by physical movement, a monitoring device which responds to the physical movement by forming a pneumatic pulse of a predetermined length, the pulse being fed to an accumulator and stored therein, the accumulator being steadily bled off; a pressure above a predetermined level is required within the accu-

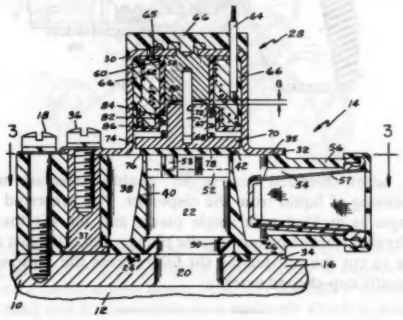
mulator to hold open a valve which is operated should the pressure drop below a predetermined level, the valve controlling continued operation of the cooperative equipment. Should the pressure within the accumulator drop below the level, the monitoring equipment shuts down the cooperative equipment.

3,729,025

SOLENOID VALVE WITH STROKE INSENSITIVE PORT

Richard L. Silvestrini, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Aug. 31, 1970, Ser. No. 68,096
Int. Cl. F16k *31/06, 1/12*
U.S. Cl. 137—625.33 6 Claims



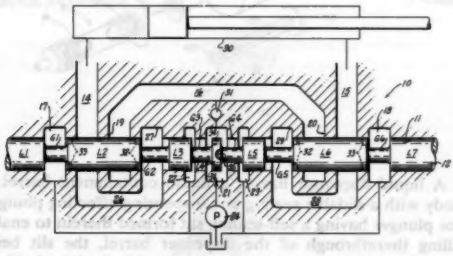
A solenoid valve has seat configurations comprising various patterns or arrangements of elongated slots. The maximum and minimum lift or stroke of the valve is related to slot width in a manner which materially reduces the differences in mass air flow resulting from variation in lift due to manufacturing tolerances. A supplemental orifice in series with the valve port may further control or limit air flow and minimize flow variation with varying valve strokes.

3,729,026

CONTROL VALVE WITH METERING TYPE VALVE SPOOL

Raud A. Wilke, Brookfield, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed May 17, 1971, Ser. No. 143,833
Int. Cl. F16k *11/07*
U.S. Cl. 137—625.69 12 Claims



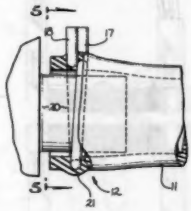
Wherever flow of pressure fluid from upstream to downstream passages in the valve body is metered by passage through throttle notches in the spool lands, the metered fluid debouches from said notches into the bore in which the spool operates before flow thereof to said downstream passages. Each throttle notch opens to the periphery of its land and to the adjacent spool groove between lands, and it has a bottom wall which recedes from the plunger axis toward the adjacent groove at an angle of from 5° to 25°, and a concave side wall which is normal to said bottom wall.

3,729,027

FLEXIBLE TUBING WITH INTEGRAL END CLAMPS

Howard J. Bare, 1721 South Bluff Road, Montebello, Calif.

Filed Jan. 26, 1972, Ser. No. 220,802
Int. Cl. F16l *9/00*
U.S. Cl. 138—109 8 Claims



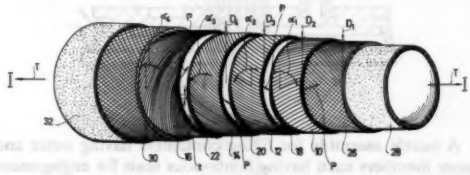
A flexible tubing is disclosed herein having a length of preferably reinforced pliable material in which a circular resilient clamp of the self-tightening type is embedded at the opposite ends thereof. Each clamp comprises a length of wire stock formed in a circle encased by the tubing material so as to be integral therewith and having a pair of tangs outwardly projecting through the tubing material adjacent a cross-over of the opposite ends of the wire stock length. The circular wire stock is resiliently biased to form a clamping action about the tubing end which effects a sealing union between the tubing and a stationary conduit or duct insertably disposed in each end of the tubing.

3,729,028

FLEXIBLE HIGH-STRENGTH WIRE-REINFORCED RUBBER HOSES

Laszlo Horvath; Gusztav Gundisch; Mihaly Arval, and Sandor Antal, all of Budapest, Hungary, assignors to Orszagos Gumipari Vallalat, Budapest VIII, Hungary

Filed June 10, 1971, Ser. No. 151,739
Int. Cl. F16l *11/00*
U.S. Cl. 138—130 5 Claims



In a flexible high-strength fiber-reinforced rubber hose having a plurality of reinforcing wire plies, a well defined relation is established between the wrapping angles of the plies the essence of which is that the angle difference between the plies of higher pitches is smaller than the angle difference between the angles of plies of smaller pitches, while the angles satisfy well defined relations.

3,729,029

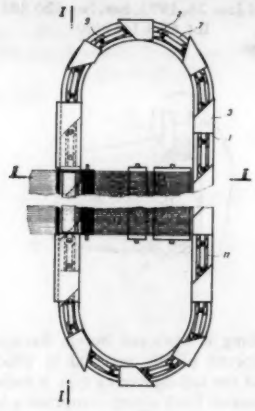
APPARATUS FOR THE TRANSPORT OF SHUTTLES

Zdenek Zabrodsky, Usti nad Orlici; Oldrich Crhonek; Jiri Sebela, both of Brno, and Milos Mares, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkummy ustav bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed April 22, 1971, Ser. No. 136,335
Claims priority, application Czechoslovakia, April 28, 1970, PV2935
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 11 Claims

Apparatus for the transport of shuttles in looms and the simultaneous picking of weft threads by means of an endless

chain conveyor carrying the shuttles and traversing a fixed guide means. A covering belt covers the parts of the chain



traversing the space of the weaving process. A disconnectable means is provided on each shuttle for the joining of the shuttle with the respective carrier links.

3,729,030

CONTAINER FILLING DEVICE

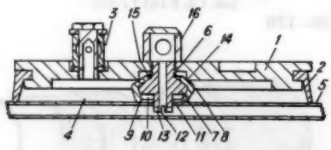
Sidney James George Brissenden, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 9, 1971, Ser. No. 161,049

Claims priority, application Great Britain, July 15, 1970, 34,314/70

Int. Cl. B65b *1/04, 3/04*

U.S. Cl. 141—1 **11 Claims**



A nozzle assembly for filling containers having outer and inner members each having continuous seals for engagement with the surface of a container whereby the assembly can be held against a container by a vacuum induced in a chamber enclosed by the outer member and its seal while the container is filled through the inner member. A method of filling containers using the nozzle assembly is also described.

3,729,031

LIQUID DISPENSER AND PLUNGER AND METHOD AND APPARATUS FOR FILLING SAME

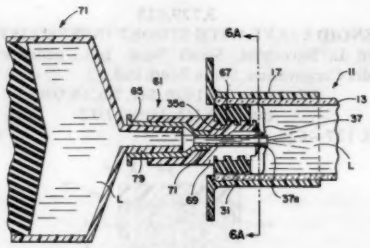
Brian E. Baldwin, Wilmette, Ill., assignor to MPL, Inc., Chicago, Ill.

Filed Dec. 6, 1971, Ser. No. 204,958

Int. Cl. B65b *3/04;* **B67c** *3/02*

U.S. Cl. 141—2 **53 Claims**

A liquid dispenser having a liquid containment barrel with a slidable dispensing-effecting and sealing plunger, the plunger having a self-sealing slit formed therein to enable filling therethrough of the dispenser barrel, the slit being formed at the bottom forwardly facing end of a threaded handle-connecting recess in the exposed rear portion of the plunger. A male fill member is employed to be inserted into and releasably open the plunger slit and to selectively fill the barrel with liquid, while venting past the male fill member through a vent eye formed in the opened slit by insertion of the male fill member. The male fill member is assisted in opening the plunger slit by securing the member into the handle-receiving threaded recess, and subsequently a handle is screwed into



this screw-threaded recess to enable selected manual dispensing of liquid from the dispenser. The preferred slitted plunger is molded as a single piece, and the slit therein is preferably formed by moving the plunger laterally past a knife edge to cut the self-sealing slit fully across the bottom of its generally cup-shaped extent.

3,729,032

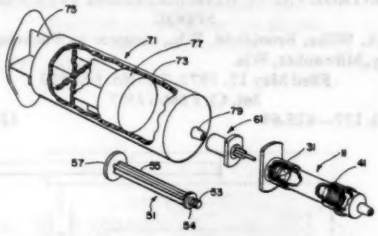
LIQUID DISPENSER AND METHOD AND APPARATUS FOR FILLING SAME

Edward A. Tischlinger, Des Plaines, and Brian E. Baldwin, Wilmette, both of Ill., assignor to MPL, Inc., Chicago, Ill.

Filed Dec. 6, 1971, Ser. No. 205,000

Int. Cl. B65b *3/04;* **B65c** *3/02*

U.S. Cl. 141—2 **59 Claims**



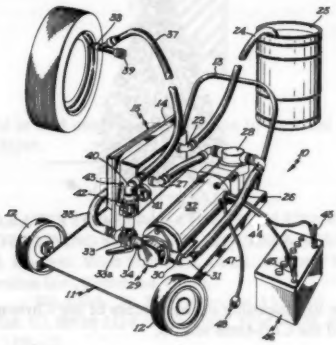
A liquid dispenser having a liquid containment barrel or body with a slidable sealing and dispensing-effecting plunger, the plunger having a self-sealing slit formed therein to enable filling therethrough of the dispenser barrel, the slit being formed at the bottom forwardly facing end of a threaded handle-connecting recess in the exposed rear portion of the plunger. A male fill member is employed, to be selectively inserted into and releasably open the plunger slit and to selectively fill the barrel with liquid, while venting past the male fill member through a vent eye formed in the opened slit as a result of insertion of the male fill member. An annular ring and grove on the rear end plunger and a lip shoulder stop on the rear end of the syringe barrel or body enable desired forward motion inhibiting action on the plunger during insertion and removal of the male fill member relative to the plunger slit.

3,729,033

COMPACT PORTABLE TIRE SERVICING DEVICE

Weldon S. Bayerkohler, Okabena, Minn., assignor to A. F. Scheppman and Son Mfg. Co., Okabena, Minn.

Filed March 22, 1971, Ser. No. 126,581
Int. Cl. B65b *31/00*
U.S. Cl. 141—231 2 Claims



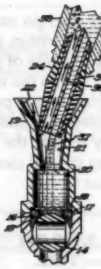
A compact portable tire servicing device comprises a base having ground engaging wheels upon which is supported a tank and a motor driven pump. A supply conduit is connected to the tank and is connectible to a reservoir which is adapted to contain a supply of calcium chloride solution. The liquid calcium chloride solution is pumped from the tank through an outlet conduit and is returned to the tank by return conduit. A control valve is interposed in flow controlling relation with respect to a filler conduit and the return conduit thus permitting the liquid to be supplied to the tire and to be evacuated therefrom. The tank is compartmented and the pump is positioned below the tank and below the connection of the return conduit to the tank so that the system is self-priming and the pump is flooded continuously.

3,729,034

VALVE AND SEAL MEANS

John C. Farrell, and Thomas L. Balfanz, both of Excelsior, Minn., assignor to Select Systems Inc., Minneapolis, Minn.

Filed Dec. 16, 1970, Ser. No. 98,584
Int. Cl. B65b *39/00*; B67c *11/04*
U.S. Cl. 141—332 1 Claim



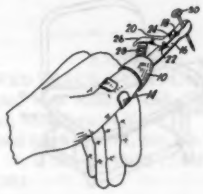
A double taper funnel is connected to a reservoir tnat is provided at another point with an open-closed valve having a ball core. The casing of the valve is separable from the reservoir and the ball can enter the casing only through this separation. A cooperating seal for connecting liquid containers to the funnel is a double ended stopper or cork with a tube extending through it. The tube is divided longitudinally by a partition to provide separate passageways for air and liquid.

3,729,035

NAIL HOLDER

Alfred L. Manzanarez, Silverton, Colo., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 13, 1971, Ser. No. 180,009
Int. Cl. B25c *3/00*
U.S. Cl. 145—46 1 Claim



Apparatus engageable with a thumb of a user and provided with a spring loaded extension for detachably holding a nail in position for nailing in such manner that the fingers of the user cannot be struck by a hammer driving the nail.

3,729,036

GOLF BAG LINER

William H. McFadden, 4820 Aspasia Lane, Edina, Minn.

Filed April 26, 1971, Ser. No. 137,187
Int. Cl. A63b *55/00*
U.S. Cl. 150—1.5 R 6 Claims

An insertable liner for golf bags consisting of a rectangular sheet of material which is flexible but self-supporting, and which is rolled to form a tube of predetermined diameter. The liner is adjustable in size to permit it to define an annular space within the golf bag into which golf clubs can be placed. The liner has specific application with golf bags in which each golf club has its own placement tube, the liner serving to peripherally space the individual tubes and maintain them in a desired relative position.

3,729,037

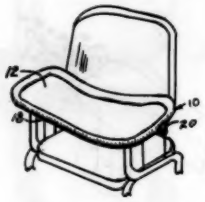
DISPOSABLE HIGH CHAIR TRAY COVER

Franklin M. Dare, and Melissa C. Dare, both of 4335 A Birch St., Tacoma, Wash.

Filed July 27, 1970, Ser. No. 58,531
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R 2 Claims

Throwaway disposable paper or plastic covers are formed or molded to conform to the top of a child's high chair tray in

such a way that spillage is confined and not allowed to gather on the surface of the permanent tray. The high chair itself is adapted to secure the high chair tray disposable cover by adding spring clamps to the edge of the high chair tray, or the throwaway cover is made to receive cross ties that hold it in



place. The disposable cover is always securely fastened so a child cannot accidentally tear it off and spill his dinner. These throwaway disposable tray covers are particularly suited for use in restaurants where children have available sanitary eating surfaces, and restaurant proprietors have available quick and sanitary clean-up tray covers for high chairs.

3,729,038

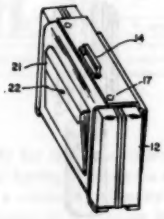
WRAP-AROUND GARMENT COVER BAG FOR LUGGAGE

Alfred G. Ekeson, Fairfield, N.J., assignor to Charles F. Winchell, Scituate, R.I.

Continuation-in-part of Ser. No. 3,780, Jan. 19, 1970. This application Nov. 18, 1970, Ser. No. 90,545

Int. Cl. B65d *65/02*

U.S. Cl. 150—52 E **6 Claims**



A wrap-around removable type of garment or article cover bag made of flexible material designed to fit or wrap around the exterior of a carrying rigid portable case and held in position by attached straps or other fastening means. The wrap-around bag or cover includes pockets to provide extra holding space for personal articles and will retain bulkier clothing between the cover bag and the carrying case.

3,729,039

CHRISTMAS TREE CONTAINER

George E. Walsh, 721 Glendale Road, Franklin Lakes, N.J.

Filed Jan. 7, 1972, Ser. No. 216,040

Int. Cl. B65d *85/70*

U.S. Cl. 150—52 R **4 Claims**

A holder and ground cloth combination for Christmas trees characterized by a container of generally cylindrical configuration, having the dual purpose of acting as a ground cloth while the Christmas tree is displayed and adapted to act as a

container for disposing of the carcass of the Christmas tree at the end of the Christmas season.

3,729,040

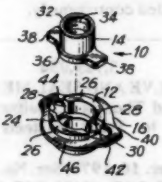
FLOATING REPLACEABLE ANCHOR NUT ASSEMBLY

Roger B. Whiteside, Cinnaminson, N.J., and William Cooper, Warminster, Pa., assignors to Standard Pressed Steel Co., Jenkintown, Pa.

Filed May 26, 1971, Ser. No. 147,043

Int. Cl. F16b *37/04*

U.S. Cl. 151—41.73 **10 Claims**



An anchor nut assembly wherein an internally threaded nut element is releasibly retained within a nut basket and is provided with a predetermined degree of radial float. The nut element is releasibly retained within the nut basket by a rotatable retaining ring member which in one position allows the nut to be readily removed or replaced within the nut basket and in a second position positively retains the nut element within the nut basket while permitting the nut element the desired degree of radial float within the nut basket.

3,729,041

TIRE

Hirokazu Kubota, Kobe, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed April 14, 1971, Ser. No. 134,001

Claims priority, application Japan, May 17, 1967, 42/31811; May 17, 1967, 42/31812; May 30, 1967, 42/35048; May 30, 1967, 42/35049

Int. Cl. B60c *13/00*

U.S. Cl. 152—353 **7 Claims**

The invention relates to a novel means for realizing a "whitewall" type tire. The tire comprises dual layer sidewalls

wherein the inner layer is the colored layer while the outer layer is an abrasion or wear-resistant layer. An annular groove

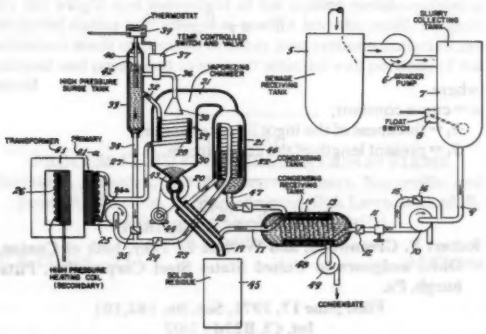
is formed in said outer layer to expose to view the underlying colored layer.

3,729,042

APPARATUS FOR SEPARATING POLLUTANTS AND OBTAINING SEPARATE LIQUIDS & SOLIDS

Henry J. Burnett, West Hartford, Conn., assignor to Pollutant Separation Inc., Elmwood, Conn.

Filed Feb. 22, 1971, Ser. No. 117,620
Int. Cl. B01d *1/28, 3/42, 1/00, 3/14, 3/00, 3/06*
U.S. Cl. 159—2 4 Claims



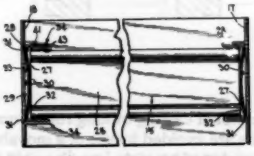
An apparatus for and method of sterilizing and separating solids from liquids in a slurry of sewage wherein said slurry is heated under a high pressure to a high temperature and then released into a low pressure atmosphere whereby the liquids in said heated slurry will burst into a vapor and the solids will be reduced to a fine powder for non-polluting disposal.

3,729,043

FIRE DAMPER WITH SMOKE SEAL

Sherwin S. Tarnoff, Northbrook, Ill., assignor to Air Balance, Inc., Chicago, Ill.

Filed March 24, 1971, Ser. No. 127,230
Int. Cl. E06b *3/12, 5/00*
U.S. Cl. 160—1 2 Claims



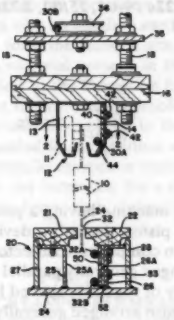
Smoke flow through a fire damper and particularly smoke flow about end edges of an assembly of reversely foldable damper blades is substantially reduced by leaf springs positioned adjacent the blade end edges in channels in side walls of a frame for the fire damper. The preferred leaf springs are ormed from thin, elongated metal strips with a central bowed portion which projects inwardly toward the blade end edges. The leaf springs exert only a light frictional force on the end edges of the blades and hence do not impede movement of the damper blades to a curtain wall position in which the damper blades prevent fire from penetrating through the fire damper. Preferably, the leaf springs are made of stainless steel to prevent rust from developing on the leaf springs and interfering with movement of the damper blades to the curtain wall position.

3,729,044

CURVED TRACK WITH PLASTIC LINER

Carl F. Gerkin, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.

Filed April 5, 1971, Ser. No. 131,265
Int. Cl. E05d *15/00*
U.S. Cl. 160—201 7 Claims



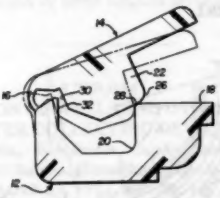
A track for a coiling partition or the like in which flexible tension members, such as cables or chains, are caused to negotiate curves in the track, in which the inside wall of smallest radius of the track curve is provided with a lining of low friction material such as nylon or ultra-high molecular weight polyethylene to form a continuous bearing surface for the flexible member.

3,729,045

MOLDED SCREEN FRAME

Robert D. MacDonald, Adrian, Mich., assignor to Cardinal of Adrian, Inc., Adrian, Mich.

Continuation-in-part of Ser. No. 77,624, Oct. 2, 1970, abandoned. This application Jan. 13, 1971, Ser. No. 106,009
Int. Cl. E06b *9/52*
U.S. Cl. 160—371 1 Claim



A one-piece plastic molded window screen frame comprises a bead-carrying locking flap which is connected by an integral hinge to a grooved base portion. The edge of the screen panel is firmly but removably retained between the interlocking bead and groove. The frame also has integral tabs which engage grooves in the window opening to retain the frame therein.

3,729,046

PROCESS FOR MANUFACTURING FOIL

Kurt D. Kennedy, Berkeley, and Maurice E. Turner, El Cerrito, both of Calif., assignors to Airco, Inc., New York, N.Y.

Filed Sept. 10, 1971, Ser. No. 179,579
Int. Cl. B22d 23/00
U.S. Cl. 164—46 4 Claims

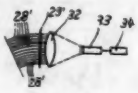
A process is described for manufacturing dense, ductile metallic foil by vacuum evaporation. The foil is produced by vacuum evaporating and depositing the metal of the foil on a high temperature substrate. A fluoride salt release agent is used to facilitate the removal of the condensed magnetic metallic material from the substrate.

3,729,047

DIE-CASTING MACHINE

Friedrich Bohnlein, and Georg Stollmann, both of Brescia, Italy, assignors to Idra-Pressen GmbH, Stuttgart, Germany

Filed Jan. 28, 1972, Ser. No. 221,568
Int. Cl. B22c 19/04, 25/00; B22d 1/02, 17/32
U.S. Cl. 164—150 10 Claims



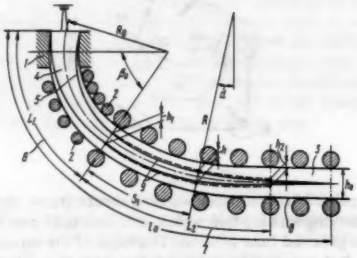
In a die casting machine having a piston rod attached to a pressure or firing piston thereof, a device for measuring the speed of said piston comprises: a reflector on said piston rod; a first member arranged generally parallel to said piston rod and carrying a plurality of regularly spaced light transmitters; and a second member also arranged generally parallel to the piston rod and carrying a plurality of regularly spaced light receivers, said members being arranged so that as the piston rod moves during a casting operation light from each transmitter is reflected into a corresponding receiver as the reflector carried by the piston passes therealong, the transmitters passing a series of pulses to a recorder from which the speed of the piston rod, and thus the piston, can be determined.

3,729,048

CONTINUOUS METAL-CASTING PLANT

Evgeny Jukhimovich Gelfenbein, ulitsa 40 let Oktyabrya, 28, kv. 51; Stanislav Evgenievich Karlinsky, ulitsa Kultury, 4, kv. 22; Vitaly Masimovich Niskovskikh, ulitsa Festivalnaya, 21, kv. 60, and Georgy Lukich Khimich, ulitsa Lenina, 53, kv. 92, all of Sverdlovsk, U.S.S.R.

Filed April 1, 1971, Ser. No. 130,413
Claims priority, application U.S.S.R., June 18, 1970, 1438559
Int. Cl. B22d 11/12
U.S. Cl. 164—282 1 Claim



A continuous metal-casting plant which includes a radial crystallizer and a secondary cooling zone of the ingot with guiding devices for the ingot. Said guiding devices form consecutively-arranged arc-shaped, curved and straight sections. The arc-shaped section has a radius of curvature and its length, including the length of the crystallizer, varies from 0.2 to 0.4 of the overall length of the plant. The length of the curved section, depending on the central angle included between the horizontal and the straight line drawn through the center of the crystallizer curvature and the junction point between said arc-shaped and curved section is determined by the relation:

$$L_2=(1.3-1.8)\left(\frac{\pi}{2}-\beta_0\right)R_0$$

where

L_2 = length of the curved section, m;
β_0 = central angle, rad.;
R_0 = radius of crystallizer curvature, m.

The guiding devices of the curved section are arranged along a curve whose radius of curvature varies with the changes in the length of this section of the thickness of the ingot liquid phase and which is expressed by a natural equation

$$R=a\frac{h}{L_2-S_1}$$

where

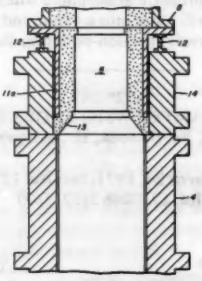
a = curve constant;
h_1 = thickness of the ingot liquid phase, m;
S_1 = present length of the curve arc, m.

3,729,049

SLIPPING COPE ASSEMBLY

Robert P. Greenwood, and William L. Tiley, both of Canton, Ohio, assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed June 17, 1971, Ser. No. 154,101
Int. Cl. B22d 15/02
U.S. Cl. 164—352 1 Claim



In the conventional casting of long rolls, contraction strains resulting in tears are avoided by use of a movable sleeve which is accurately machined to slide into the chill. Subsequent to pouring of the metal, supports holding the sleeve are removed and the sleeve then follows the shrinking metal, thus permitting the solidifying metal to contract without tearing. The subject invention provides an improved slipping cope assembly, which avoids contact with the solidifying metal and is readily adaptable to chills of varying diameters.

3,729,050

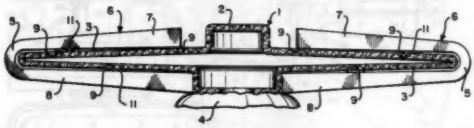
REFRACTORY SUPPORT FOR SHELL MOLDS

John J. Carnot, West Orange; Stanley Carroll Tingquist, Sparta; Ronald Robert Robb, Dover, and Roy Chester Feagin, Mountain Lakes, all of N.J., assignors to Howmet Corporation, Muskegon, Mich.

Continuation of Ser. No. 808,614, March 19, 1969, abandoned. This application Aug. 10, 1971, Ser. No. 170,645

Int. Cl. B22c 9/02

U.S. Cl. 164—361 4 Claims



This disclosure relates to devices for supporting molds while they are being poured to reduce distortion of the mold caused by the weight and movement of the molten metal-containing material during and after it is poured into the mold. Support elements made of ceramic or other heat resistant materials are shaped and positioned to support selected wall portions of the mold.

3,729,051

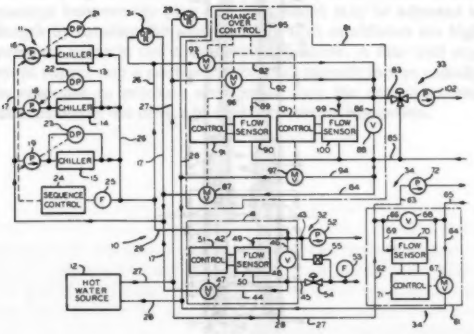
PROCESS FLUID FLOW REGULATION SYSTEMS

Gerald F. Mannion, 608 Bowlingreen Court, Naperville, and James R. Mannion, 10336 S. Kolmar, Oak Lawn, both of Ill.

Filed Aug. 17, 1971, Ser. No. 172,504

Int. Cl. F24h 3/00

U.S. Cl. 165—22 15 Claims



A flow regulation unit and system for regulating the flow of chilled water, hot water, or other incompressible process fluid to a series of utilization stations having common feeder and return lines and each having its own inlet pump, comprising a bridge between the inlet and outlet connections of each utilization station, sensing means for sensing flow rates in the bridge, a regulating valve interposed in the bridge outlet, and a control, actuated by the sensing means, for adjusting the regulating valve to maintain the flow across the bridge within a limited range.

3,729,052

HYDROTHERMAL TREATMENT OF SUBSURFACE EARTH FORMATIONS

Lyle Caldwell, 2311 Alto Oak Drive, Los Angeles, Calif.

Continuation of Ser. No. 32,400, April 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 824,371, May 5, 1969, abandoned, which is a continuation of Ser. No. 666,470, Sept. 8, 1967, abandoned. This application June 15, 1971, Ser. No. 153,393

Int. Cl. E21b 43/02, 43/26

U.S. Cl. 166—283 11 Claims

A consolidated, permeable mass of siliceous material is formed within a permeable, subsurface earth formation or in the well bore penetrating such formation, in order to control loose or unconsolidated sand present in such formation, by injecting and displacing into the formation an aqueous solution substantially saturated with an alkaline earth metal hydroxide or compounds which form the same in situ, by reacting with each other or with a material present in the formation, and maintaining the solution in the formation for a time and at a temperature sufficient to form such consolidated, permeable mass from siliceous materials present in the formation, or a siliceous material is added to the solution and the solution is disposed in the well bore, in cavities or openings in the formation or in fractures in the formation for a time and at a temperature sufficient to form such consolidated, permeable mass.

3,729,053

METHOD FOR INCREASING PERMEABILITY OF OIL-BEARING FORMATIONS

H R. Froning, Tulsa, Okla., assignor to Amoco Productions Company, Tulsa, Okla.

Filed Jan. 5, 1972, Ser. No. 217,703

Int. Cl. E21b 43/25

U.S. Cl. 166—304 12 Claims

Water injection wells are treated to increase their injectivity by first introducing a solvent such as carbon disulfide, carbon tetrachloride or a composition rich in monocyclic aromatics, into the formation surrounding the well. The waxes and/or bituminous materials normally found at or near the surface of such wells are highly soluble in solvents of this kind. In order to assure the stability of the subsequently injected micellar solution, a suitable buffer such as water or a predominantly aliphatic hydrocarbon, e.g., kerosene, gas oil or crude oil, etc., is injected to immediately follow the aromatic hydrocarbon solvent. Thereafter, the micellar solution, usually containing not more than about 50 percent water, is injected and is substantially miscible with the buffer slug. This system of solvent buffer and micellar solution is then forced out into the formation by means of water or other suitable drive agent.

3,729,054

REJUVENATION OF WELLS AND OTHER GROUND-WATER COLLECTING DEVICES

Kashimi Yokoyama, Hiroshima, Japan, assignor to Suiri Kogyo Kabushiki Kaisha, Hiroshima, Japan

Filed March 23, 1971, Ser. No. 127,124

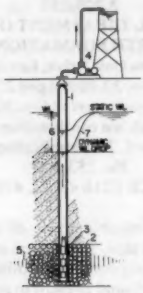
Claims priority, application Japan, Dec. 28, 1970, 45/119633

Int. Cl. E21b 21/00

U.S. Cl. 166—312 3 Claims

A drilled well of deficient performance due to accumulation of scales on the water-intake parts of its well pipe is rejuvenated at low cost by inserting a cleaning pipe of smaller diameter through the well pipe to supply concurrently to the water-intake parts an aqueous solution of a harmless washing

agent and high-pressure air, which produce a cooperatively combined agitation action by which the scales are chemically dissolved, loosened, and washed off and can be subsequently removed by pumping through the well pipe. The air and solution are delivered from respective supply pumps and supplied through a mixer to the cleaning pipe to be ejected with high energy through a vaned turbine wheel at the lower end of the cleaning pipe.



3,729,055

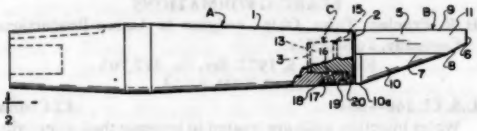
TAMPER BAR FOR A TAMPING MACHINE

George D. Burridge, 36876 Munyan St., Newark, Calif.

Filed March 24, 1971, Ser. No. 127,453

Int. Cl. E01b *27/16*

U.S. Cl. 172—719 6 Claims



A two part tamper bar consisting of a tamper bar shank and a tamper bar foot removably secured to the shank. The shank is made from high carbon steel, heat treated, and the foot is made from tool steel. The foot has an integral truncated conical projection that is receivable in a conical recess in the end of the shank. Novel means removably connects the foot to the shank. The foot is rectangular in shape and has an integral semi-conical portion on one face whose greatest radius is the same as the radius of the shank end that lies adjacent to the foot and the center of the radius of the semi-conical foot portion coincides with the center of the shank end radius. The other or second face of the foot has its plane lying tangent to the circumference of the shank end and, therefore, the second face will lie flush with one portion of the shank end circumference and the semi-conical portion will lie flush with another portion of the shank end circumference.

3,729,056

MINING AND EXCAVATING APPARATUS

Friedrich Wilhelm Paurat, Alte Hunxer Str. 45, 4222 Friedrichsfeld, Germany

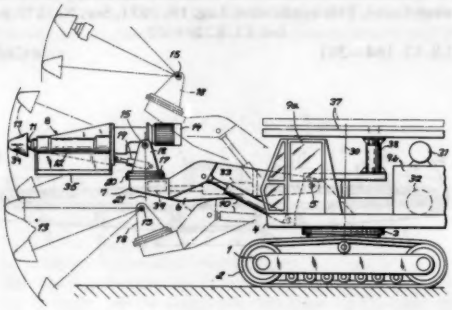
Filed April 19, 1971, Ser. No. 135,254

Claims priority, application Germany, April 18, 1970, P 20 18 778.4

Int. Cl. E21c *11/02*

U.S. Cl. 173—43 9 Claims

A percussive mining and excavating apparatus has a carriage supporting a body which is rotatable on the carriage about a substantially vertical axis. An arm has one end pivoted on the body about a horizontal axis and carries on its other end a rectilinearly displaceable hammer. The drive for the hammer, and the hammer itself, are pivotal on this other end of the arm about horizontal and vertical axes so that the hammerhead can attack a wall, floor, or ceiling squarely even when offset from the body. A horizontally or vertically displaceable pair of such electrically-powered hammers can be mounted on the arm and can themselves be individually pivotal about horizontal axes.



3,729,057

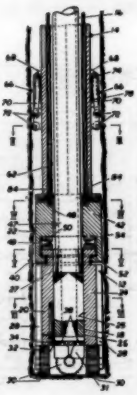
TRAVELLING DRILL BIT

George S. Werner, Pensacola, Fla., assignor to Werner Industries, Inc., Pensacola, Fla.

Continuation-in-part of Ser. No. 872,070, Oct. 29, 1969, abandoned. This application Nov. 30, 1971, Ser. No. 203,164

Int. Cl. E21b *11/00*

U.S. Cl. 175—262 12 Claims



Drill bit and drill collar assemblies for use with a drill string which assemblies can be moved up and down the drill string without the need of removing the drill string from the well hole. The drill collar assembly also is shaped, and includes elements, which together serve to prevent excessive lateral shifting of the drill string, thereby assuring the drilling of a straight well hole.

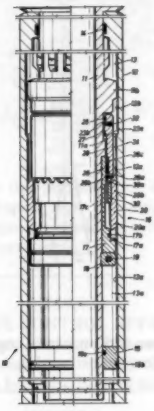
This invention relates to improved drill bit and drill collar assemblies for use in combination with a drill string used in the drilling of wells, such as oil wells, for example.

3,729,058

HYDRAULIC JARRING MECHANISM

Preston C. Roberts, Terrebone Parish, La., assignor to Kajan Specialty Co. Inc., Houma, La.

Filed Oct. 21, 1970, Ser. No. 82,571
Int. Cl. E21b *1/10, 23/00*
U.S. Cl. 175—297 19 Claims



A bypass passage for displaced fluid in an hydraulic jarring device is equipped with a pressure responsive regulator sleeve which automatically moves axially within the fluid reservoir of the device to restrict fluid flow through the passage as required to maintain a relatively constant pressure in the compression chamber of the reservoir during an initial portion of the upstroke. An externally threaded plug is set within a threaded bore extending through the sleeve between the compression chamber and the bypass passage. The thread peaks on the plug are flattened which produces a helical orifice passage between the plug and bore which may be adjusted in length by rotating the plug which in turn establishes the high pressure value in the compression chamber. A thin wall segment supporting a portion of the plug threads moves radially in response to pressure changes to vary the cross-sectional dimensions of the orifice to assist in pressure regulation.

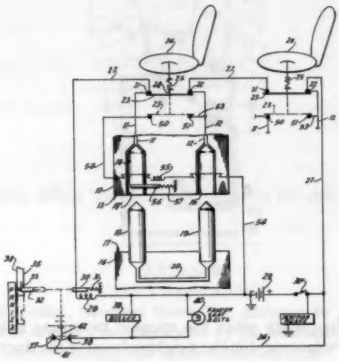
3,729,059

SEAT BELT SAFETY SYSTEM FOR MOTOR VEHICLES

Benjamin Redmond, New York, N.Y., assignor to Leila R. Chenkin, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,392
Int. Cl. B60r *21/10*
U.S. Cl. 180—82 6 Claims

A seat belt safety system for motor vehicles has all of its seat belts as elements of a common electrical circuit operative to control the drive system of the vehicle and to prevent placing the vehicle in motion, while permitting running of the vehicle's engine with the vehicle at rest, unless and until the seat belt in each and every occupied seat of the vehicle, is buckled. To prevent circumvention of this safety feature, as by a passenger buckling the belt before occupying his seat, each seat belt incorporates electro-mechanical means operative to prevent the belt from being buckled unless and until the seat is occupied.

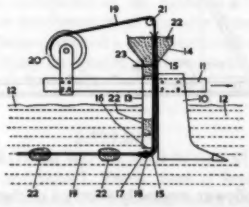


3,729,060

SEISMIC PROSPECTING

Frank McDonald Murray, Kilmarnock, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed July 27, 1970, Ser. No. 58,580
Claims priority, application Great Britain, Aug. 13, 1969, 40,414/69
Int. Cl. G01v *1/13*; E02f *5/10*
U.S. Cl. 181—0.5 XC 11 Claims



A method of seismic prospecting wherein detonating cord is laid parallel to the surface of a prospect area, a quantity of a fluent explosive, for example a free-running powdered or slurried blasting explosive, is placed adjacent to the cord, and the cord and explosive are detonated.

3,729,061

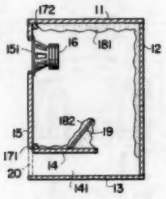
SPEAKER BOX

Yutaka Tamura, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 26, 1971, Ser. No. 119,333
Claims priority, application Japan, Feb. 27, 1970, 45/16808
Int. Cl. G10k *13/00*; H04r *1/28*
U.S. Cl. 181—31 B 4 Claims

A speaker box has a baffle plate with a speaker mounting hole provided in either the upper or lower portion. A duct for inverting a phase of sound in the neighborhood of the lowermost resonant frequency of the speaker is provided to introduce the sound outside the speaker. Sound absorbing means is provided on the duct so as not to unduly interfere with the sound discharged from the front surface of the

speaker in the range that the sound discharged rearwardly of the speaker is of a higher frequency band than the lowermost resonant frequency when the speaker mounting hole is provided in displacement in the neighborhood of the duct.

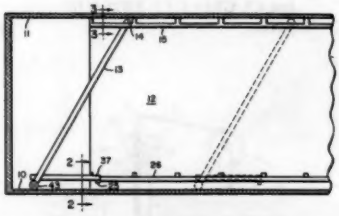


3,729,062

SHIFTABLE LADDER INSTALLATION

Joseph Anthony Freiburger, 2037 Edgewood, N.E., Grand Rapids, Mich.

Filed Oct. 15, 1969, Ser. No. 866,596
Int. Cl. E06c *1/397*
U.S. Cl. 182—39 **2 Claims**



A guide follower assembly secured to the lower portion of an inclined ladder engages a downwardly open guide rail channel for stabilizing the position of the lower portion of a ladder with respect to the guide rails, the upper portion of the ladder being supported in conventional fashion by a follower engaging an upper guide rail. The ladder is inclined in a vertical plane parallel to the guide rails, and the lower follower is mounted on an arm extending preferably from the underside of the ladder, as inclined.

3,729,063

TELESCOPING LADDER

John E. Hein, 14 Cascade Drive, R.D. 2, Warren, N.J.

Filed Jan. 19, 1972, Ser. No. 219,076
Int. Cl. E06c *1/12, 1/22, 1/38*
U.S. Cl. 182—156 **11 Claims**

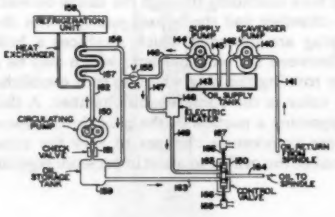
An extensible ladder, consisting of a plurality of nesting telescoping channel sections, which can be telescopically extended, relative to each other. Each section, except the innermost, has a pivoted supporting dog which can be rotated inwardly so as to underlie and support the bottom rim of the next inwardly adjacent section. Each section has a plurality of vertically spaced pairs of opposite outwardly rotatable step bars which can be rotated to outwardly extending horizontal positions. The step bars are supported in outwardly extending positions on lugs provided on the sections or in notches provided in the top rim portions of the next subjacent sections. The lowermost section has a removable supporting base, having side struts whose top ends are engaged in slots provided near the top of the lowermost section.

3,729,064

MACHINE TOOL

Heinz K. Wolf, Willoughby Hills, and Alan G. Alexander, Mentor, both of Ohio, assignors to The New Britain Machine Company, Cleveland, Ohio

Division of Ser. No. 734,105, June 3, 1968, Pat. No. 3,555,962.
This application Jan. 18, 1971, Ser. No. 107,330
Int. Cl. F01m *5/00*
U.S. Cl. 184—6.14 **5 Claims**



A machine tool having a power driven rotatable tool spindle and an oil distribution and lubrication system for supplying oil to the bearings and tool spindle and preferably stabilizing the bearings, spindle and spindle housing at a predetermined operating temperature range.

3,729,065

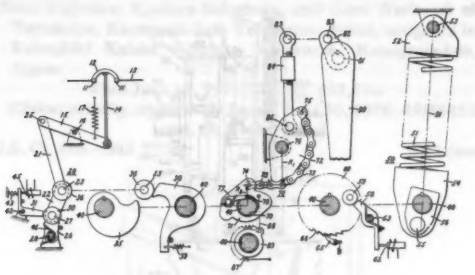
MEANS FOR CHARGING A STORED ENERGY CIRCUIT BREAKER CLOSING DEVICE

Ralph J. Baskerville, Sarasota, Fla., and Patrick P. Yen, Philadelphia, Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed March 5, 1971, Ser. No. 121,284
Int. Cl. F03g *1/00*
U.S. Cl. 185—39 **8 Claims**

For charging the closing spring of a heavy-duty electric circuit breaker, manually actuated charging means is provided

for effecting the desired charging action in response to a single stroke of an input handle. The charging means comprises a pair of spaced cams interconnected by a flexible power-transmitting member that winds about the periphery of one cam



while unwinding from the periphery of the other. The cam peripheries are so shaped that the torque on the handle needed to charge the spring remains generally constant during most of the charging operation.

3,729,066

ELEVATOR CONTROL APPARATUS

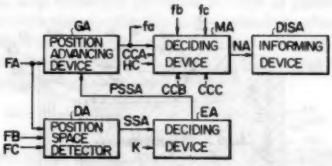
Tatsuo Iwasaka, 3174-14, Nakane; Hideto Matsuzawa, 404-3, Ichige; Takeo Yuminaka, 5-13, Ishikawa; Akinori Watanabe, and Isao Inuzuka, both of 663 Ichige, all of Katsuta, Japan

Filed July 6, 1971, Ser. No. 159,781

Claims priority, application Japan, July 3, 1970, 45/57774

Int. Cl. B66b *1/18*

U.S. Cl. 187—29 R **9 Claims**



An elevator control apparatus which operates a plurality of elevators so as to serve a plurality of landing floors evenly, wherein the imaginary position of each elevator is determined in accordance with the space between each elevator and the succeeding one, a service zone of each elevator being established between the imaginary positions of each elevator and the preceeding one, and the elevator being stopped when a call is produced within the service zone.

3,729,067

MOUNTING MEANS AND DISK FOR AN EXTERNALLY SUPPORTED DISK BRAKE

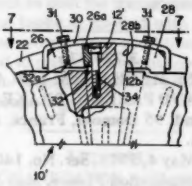
Edwin K. Buyze, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa.

Filed Dec. 16, 1970, Ser. No. 98,508

Int. Cl. B60t *1/06*

U.S. Cl. 188—18 A **1 Claim**

A driver and disk supported thereon for a vehicle disk brake assembly wherein the disk is floatingly supported by the driver. The disk includes an adjustable gib associated with a drive lug. Heat expansion during braking operation does not



appreciably affect the clearance between the driver and the disk.

3,729,068

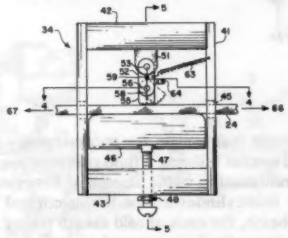
CABLE RESTRAINT

Harry V. Fuller, Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 17, 1970, Ser. No. 99,201

Int. Cl. B65h *59/16*

U.S. Cl. 188—65.1 **4 Claims**



A device for receiving a cable therethrough and permitting substantially free movement of the cable in a first direction but resisting cable movement in an opposite direction until the forces exerted thereon exceed a predetermined minimum and thereafter permitting free cable movement in said opposite direction.

3,729,069

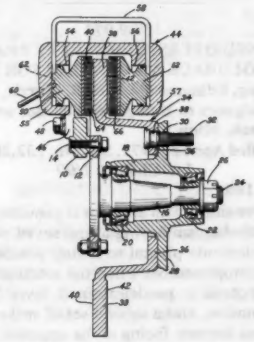
DISC BRAKE ROTOR WIPER AND NOISE SUPPRESSOR

Bruce W. Klein, and John L. Turak, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed June 28, 1971, Ser. No. 157,212

Int. Cl. F16d *55/228*

U.S. Cl. 188—72.5 **1 Claim**



A disc brake having a rotor with opposed braking surfaces thereon engageable respectively by two friction pads, the radi-

al widths of which are greater than the radial widths of the respective braking surfaces which the pads overlie so that the pads will overlap the braking surfaces at their inner and outer radii.

3,729,070

MANUAL RELEASE MECHANISM FOR AN EMERGENCY AND PARKING BRAKE

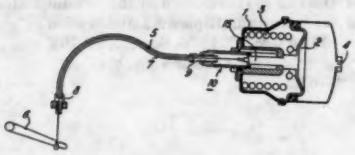
Claude Le Marchand, 95 Domont, France, assignor to Societe Anonyme D. B. A.

Filed May 4, 1971, Ser. No. 140,074

Claims priority, application France, May 5, 1970, 7016324; June 1, 1970, 7019972; March 2, 1971, 7107093

Int. Cl. F16d *59/02*

U.S. Cl. 188—170 **8 Claims**



Manual release mechanism for an emergency and parking brake control system utilizing a fluid pressure operated spring cylinder, a transmission cable stretched between the piston contained in this cylinder and a brake control lever being guided by a sheath, the ends of said sheath taking anchor on a pair of stops respectively connected to stationary parts. The mechanism comprises two relatively slidable members, one connected to one of the stops, the other one connected to the adjacent stationary part, these members being normally locked in the position of their maximum extension. Release of the emergency brake is obtained by releasing the locked members, thus allowing the stop of the sheath to move to a position in which the tension of the cable is relieved. One of the members can be a socket connected to the cylinder body, the other member being then a plug connected to the stop and slidably received in the socket, a projection on the plug and a notch in the socket allowing these members to be mutually locked or unlocked when one of the members is rotated while the projection is facing the notch. Embodiments are described in which re-locking of the members occurs automatically upon reinstating fluid pressure in the spring cylinder.

3,729,071

COMBINED OVERSPEED SAFETY BRAKE AND REVERSE HOLDBACK MECHANISM FOR ELEVATORS

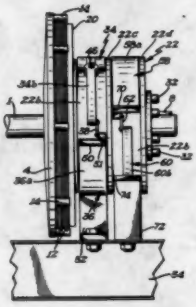
Marvin R. Laing, Edina, and Adwell B. Morris, Faribault, both of Minn., assignors to Humphrey Elevator and Truck Company, Faribault, Minn.

Filed April 8, 1971, Ser. No. 132,283

Int. Cl. B60t *1/00*

U.S. Cl. 188—189 **8 Claims**

A rotary drive shaft of an elevator is provided with a double acting brake mechanism having a first set of centrifugally actuable strike elements pivotal to a stop position to engage a first stationary stop member when the rotational speed of the drive shaft exceeds a predetermined level in the normal direction of rotation, and a second set of strike elements with contact surfaces thereon facing in the opposite direction from contact surfaces on the first set of strike elements and pivotal to a stop position to engage a second stationary stop member oriented to cooperate with the second strike elements in preventing reverse rotation of the drive shaft. The two sets of strike elements are supported in spaced relation along the rotational axis of the drive shaft on an annular clamping



member of a disc brake assembly by means of common pivot pins extending parallel to the axis of rotation of the drive shaft.

3,729,072

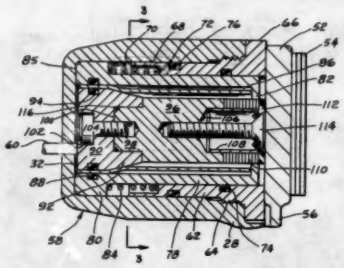
BRAKE ADJUSTER

Donald F. Borkowski, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed March 24, 1972, Ser. No. 237,778

Int. Cl. F16d *65/52*

U.S. Cl. 188—196 P **8 Claims**



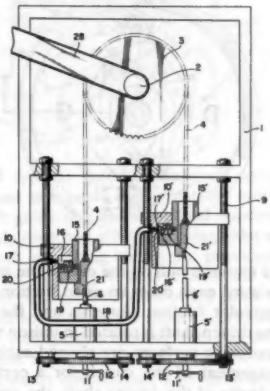
An automatically operative brake adjuster and retract device particularly adapted for a multiple disc brake of the disc type. A fixed outer bushing threadedly engaged with a carrier member slidably contains an inner bushing loaded by a return compression spring interposed between the inner and outer bushings. A radially deformable cylinder fixed to the inner bushing slidably contains a fluid pressure actuated tapered piston having an interference or force fit therein and adapted to deform the cylinder radially outwardly under the influence of applied pressurized fluid on the piston to permit axial movement of the piston therein to the degree necessary for brake application. Brake release in response to depressurization of the piston permits the inner bushing to retract relative to the outer bushing under the influence of the compression spring thereby establishing a predetermined retract position of the cylinder and thus the piston frictionally engaged therewith.

3,729,073

BUFFER DEVICE OF A ROBOT MACHINE FOR CONTROLLING THE ROTATIONAL MOVEMENT OF A ROBOT ARM

Hisao Fujiwara; Kentaro Sakamoto, and Goro Wada, all of Totsukaku, Kanagawa-ken, Yokohama, Japan, assignors to Kabushiki Kaisha Keiaisha Seisakusho, Kanagawa-ken, Japan

Filed June 14, 1971, Ser. No. 152,574
Claims priority, application Japan, June 30, 1970, 45/56452
Int. Cl. F16f 9/26
U.S. Cl. 188—303 5 Claims



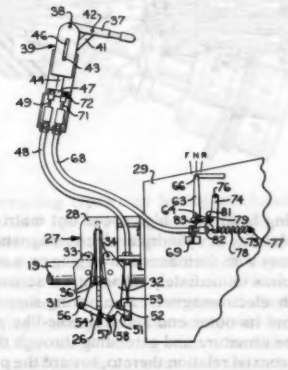
This invention relates to a buffer device of a robot machine for controlling rotational movement of a robot arm by smoothly and accurately operating the rotational shaft at both ends of its swing motion, and which comprises a rotational shaft, a chain for driving said shaft, pistons in the hydraulic pressure means, the ends of said chain being applied between said pistons, stop members provided at ends of piston rods in engagement with pistons slidable in the cylinders, whereby airtight chambers are formed in said cylinders connected with a pipe and said airtight chambers are opened or closed by means of valves operable by said pistons.

3,729,074

PARKING BRAKE CONTROL WITH TRANSMISSION INTERLOCK

Rodney H. Anderson, Naperville, and Ralph R. Day, Aurora, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,712
Int. Cl. B60k 29/02
U.S. Cl. 192—4 C 2 Claims



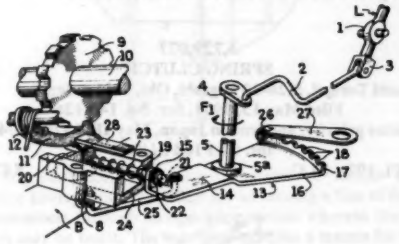
A control system for a vehicle having a parking brake and a transmission is provided with means cooperating with the transmission controls to bias the transmission into a neutral condition when the parking brake is applied. The cooperating control means coact to shift the transmission to a neutral position if the parking brake is applied with the transmission in either a forward or reverse drive condition. A resilient biasing means is employed to provide a manual override to enable the transmission to be manually held in an operating condition with the parking brake engaged.

3,729,075

CONTROL MECHANISM FOR A TRANSVERSE POWER UNIT HAVING AN AUTOMATIC TRANSMISSION

Jean Piret, 78 Bougival, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines, Billancourt, France

Filed July 6, 1971, Ser. No. 160,028
Claims priority, application France, July 10, 1970, 7025796
Int. Cl. F16d 67/00
U.S. Cl. 192—4 A 9 Claims



Control mechanism for a power unit having an automatic transmission for interposition between a manually operated selector and a parking brake and a slide of a control. The mechanism comprises a rotatable control bar connected to the selector and fixed at one end to a lever connected by a rod provided with a ramp adapted to cooperate with a pawl for shifting the latter into or out of engagement with a toothed wheel of a parking brake. A spring is interposed between the rod and lever in such manner that the lever shifts the ramp through the medium of the spring to engage the pawl with the toothed wheel. The lever directly acts on the rod in the direction for disengaging the pawl from the toothed wheel. Connecting means connect the lever to the slide.

3,729,076

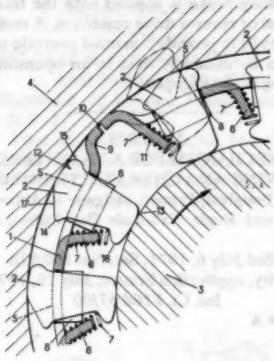
OVERRUNNING CLUTCH

Pierre De Lacroix de Lavalette, Paris, France, assignor to Societe Anonyme dite: SKF Compagnie D'Applications, Mecaniques, Clamont, France

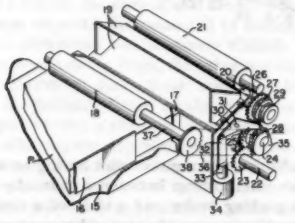
Filed June 3, 1971, Ser. No. 149,722
Claims priority, application France, June 4, 1970, 7020610
Int. Cl. F16d 41/07
U.S. Cl. 192—41 A 7 Claims

Overrunning clutch of the type comprising a plurality of cams positioned between the two facing concentric surfaces of a shaft and concentric external ring, said clutch comprising an annular cage having openings through which said cams project, said cams being smaller at one end than the other and

said openings being large enough to pass the smaller end of a cam but too small to pass the larger end, and spring means engaging the smaller end of each cam and biassing it away from said cage toward one of said concentric surfaces.



3,729,077
SPRING CLUTCH
Akiyoshi Torigai, 5-26-20 Higashi, Ohi, Tokyo, Japan
Filed May 13, 1971, Ser. No. 143,126
Claims priority, application Japan, May 18, 1970, 45/42316
Int. Cl. F16d *11/06*
U.S. Cl. 192—81 C **5 Claims**



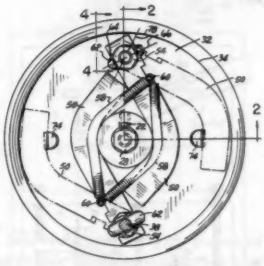
A simple and compact spring clutch suitable for use with paper feed means in copying machines and the like and provided with a coiled spring wound around two equally diametered bosses mounted in opposed relationship and for rotation on a common shaft driven from a drive source. The coiled spring is tightened and loosened with respect to the two bosses whereby when the spring is tightened, the two bosses are connected to transmit a drive and when loosened, the two bosses are separated to interrupt the transmission.

ERRATUM

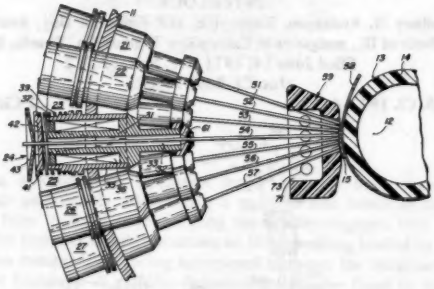
For Class 192—12 see:
Patent No. 3,729,171

3,729,078
CLUTCH WITH CENTRIFUGALLY OPERATED CAMS
James R. Kincaid, 14717 Ziegler, Taylor, Mich., and Clifford Kincaid, 1386 Arlington, Lincoln Park, Mich.
Filed June 23, 1971, Ser. No. 156,006
Int. Cl. F16d *43/10*
U.S. Cl. 192—105 CP **8 Claims**

An automatic clutch, engaged by centrifugal force, for coupling a driven shaft with a driving shaft above a predetermined rotational velocity of the driving shaft, and comprising a pair of spaced apart plates, one of which is mounted on the driving shaft, a disc disposed between the plates and connected to the driven shaft, and a pair of annular friction elements disposed one between a plate and the disc and the other between the disc and the other plate. The two plates are interconnected by means of a pair of longitudinally extending studs, and an arm is mounted for pivotal motion on the end of each stud, the surfaces of the arm and the plate in engagement being provided with complementary camming surface such that the pivotal motion of the arm under the influence of centrifugal force causes a pull on the end of the stud drawing the two plates toward each other so as to frictionally engage the plates, the annular friction elements and the disc, with the result that the driven shaft is rotated in unison with the driving shaft. The camming surfaces are shaped such as to cause a positive engagement of the clutch for a certain amount of rotational velocity of the driving shaft, the amount of torque transmitted through the clutch coupling being dependent from the initial adjustment of the clutch rather than dependent from the rotational velocity of the driving shaft.



3,729,079
PRINTING HEAD FOR HIGH SPEED DOT MATRIX PRINTER
Walter J. Zenner, Des Plaines, and Raymond E. Kranz, Mount Prospect, both of Ill., assignors to Extel Corporation, Chicago, Ill.
Filed Oct. 30, 1970, Ser. No. 85,675
Int. Cl. B41j *1/18*
U.S. Cl. 197—1 R **9 Claims**



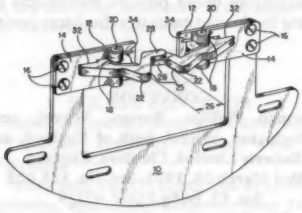
A printing head for a high speed dot matrix printer, comprising a plurality of cylindrical electromagnets mounted in an arcuate array with their axes converging on a series of linearly aligned points immediately adjacent an acruate printing surface. Each electromagnet has a spring-supported armature spaced from its outer end and a needle-like printing rod affixed to the armature and extending through the magnet coil, in spaced coaxial relation thereto, toward the printing surface. A guide bearing engages each rod near the printing surface, but most of the rod length is free of surface contact.

3,729,080

RUGGEDIZED TYPEBAR GUIDE

Hans W. Mueller, Cortland, N.Y., assignor to SCM Corporation

Filed June 1, 1971, Ser. No. 148,457
Int. Cl. B41j 25/22
U.S. Cl. 197—43 11 Claims



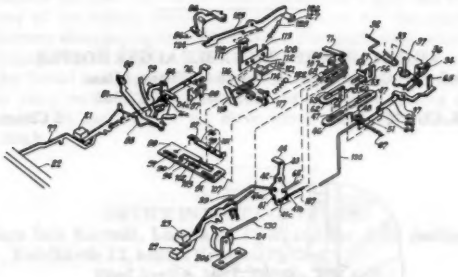
A ruggedized typebar guide is disclosed comprising two spaced pivots and two guide dogs rotatably mounted to the pivots with each guide dog having spaced opposing cam surfaces respectively disposed along opposing sides of a typebar flight path. Shock absorbing means are provided permitting limited movement of the pivots in a direction substantially parallel the flight path upon rotation of the guide dogs. Means are also provided for rotating the guide dogs about the movable pivots upon passage of a typebar between the guide dogs along the typebar flight path to converge the two opposing cam surfaces towards one another a predetermined distance within the flight path to center the typebar.

3,729,081

TYPEWRITER CARRIAGE AND RIBBON FIELD CONTROL FOR ERROR CORRECTION

Chester E. Ozimek, Park Ridge, and Charles H. Seefeldt, Riverside, both of Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.

Filed Dec. 11, 1970, Ser. No. 97,169
Int. Cl. B41j 19/00
U.S. Cl. 197—82 5 Claims



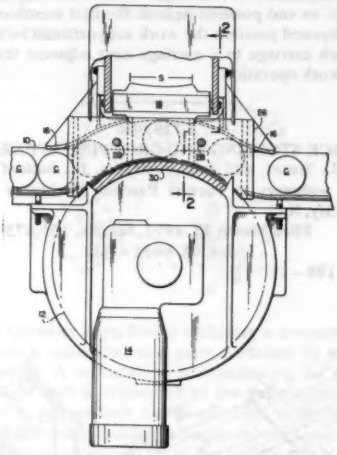
An error correcting typewriter having mechanism for disabling the forward spacing mechanism of the carriage to prevent movement of the carriage for two successive actuations of any character key. A manual key is connected with and to concurrently operate the backspace drive mechanism, the disabling mechanism and the ribbon vibrator. The carriage, after being backspaced one letter width increment, remains in such position during the actuation of a first character key to obliterate an error and the actuation of a second character key to print a correct character. Thereafter, the forward spacing mechanism again becomes effective.

3,729,082

FRAGMENTATION SHIELD FOR A CONTAINER PROCESSING MACHINE

Andrew S. Federko, Bloomfield, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Nov. 22, 1971, Ser. No. 200,904
Int. Cl. B23q 5/22
U.S. Cl. 198—19 11 Claims



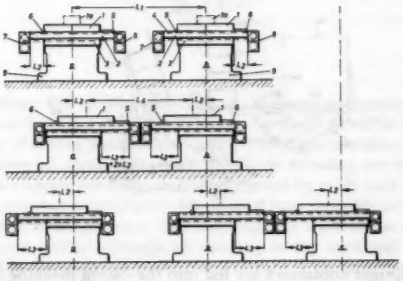
A fragmentation protection structure or shield for a machine having a conveyor belt for advancing a line of frangible containers through an operating station wherein the containers may be burst. The machine includes a means for moving the containers one at a time toward one edge of the belt where the operating station is located, and a plate is supported on the machine over the said station. A thin resilient shield is supported by and below the plate and is so constructed and arranged as to cover the open mouths of containers approaching and leaving the operating station and to be spaced above the open mouth of a container at the station.

3,729,083

BUILDING BLOCK SYSTEM FOR MACHINE TOOLS AND PRODUCTION LINES

Jakob Wollenhaupt, and Agnes Wollenhaupt nee Stang, both of Inn Langen Bruch 33, Cologne-Bruck, Germany

Filed July 16, 1971, Ser. No. 163,260
Claims priority, application Germany, July 20, 1970, P 20 35 874.1
Int. Cl. B23q 5/22
U.S. Cl. 198—19 27 Claims



A line for performing work operations on work members in successive stations, with each station having therein a unit on

which is mounted a carriage moveable parallel to the line of working stations and having an intermediate working position on the base of the respective unit. Work supports are provided which are slidable on the carriages parallel to the sliding direction of the carriages and which can be locked to the carriages in intermediate working positions.

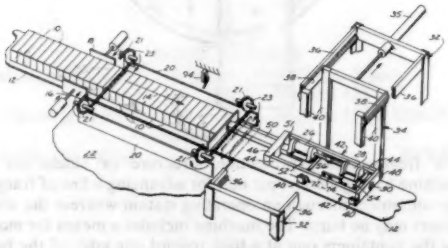
When a carriage is moved to either of two end positions on the respective base it is adjacent the carriage on the next adjacent unit when the carriage on the next adjacent unit is moved to its end position nearest the first mentioned unit. In this juxtaposed position the work supports can be transferred from each carriage to a carriage next adjacent thereto for a further work operation.

3,729,084

BRICK STOPPING AND GROUPING APPARATUS

Gerald L. Stuart, and John J. Brown, Jr., both of Siler City, N.C., assignors to Forrest Paschal Machinery Company, Siler City, N.C.

Filed March 22, 1971, Ser. No. 126,673
Int. Cl. B65g *47/32*
U.S. Cl. 198—21 **5 Claims**



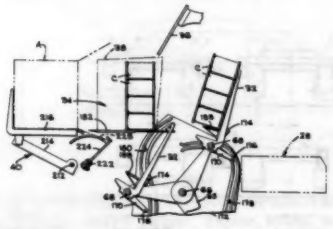
Retractive movement of the brick engaging member is controlled by a plurality of piston and cylinder assemblies connected in tandem thereto and displaceable therewith when desired to an inoperative position.

3,729,085

CASING MACHINE

David F. Schlueter, Hoopeston, Vermilion, Ill., and Myron C. Noble, St. Joseph, Ind., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 757,876, Sept. 6, 1968, abandoned. This application Oct. 19, 1970, Ser. No. 82,044
Int. Cl. B65g *47/24*
U.S. Cl. 198—25 **4 Claims**



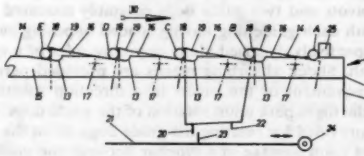
Upright containers are fed into the casing machine from a multiple lane supply line, assembled into one tier, and the tier is transferred and reoriented by tiering fingers which deposit the containers in a tiering chamber. The open end of an empty case is manually positioned adjacent the tiering chamber, and pusher feet insert the tier in the case. A feature of the casing machine is a rocking differential which smoothly accelerates and decelerates the tiering fingers to prevent damage to the containers. Other features include a timing pin and chain mechanism which can be manually adjusted to control the number of tiers loaded into a case, rapid change structure in the zone where the tiers are assembled so that the machine is readily adaptable to handle a range of container sizes, and a lowerator mechanism under positive mechanical control for gently lowering the loaded cases to a discharge position.

3,729,086

CONVEYOR

Maurice Norman Phillips, Burton, Wirral, and Samuel Roberts, Begington, Wirral, both of England, assignors to Phillips & Roberts Limited, Cheshire, England

Filed March 18, 1971, Ser. No. 125,628
Int. Cl. B65g *25/04, 47/29*
U.S. Cl. 198—34 **8 Claims**



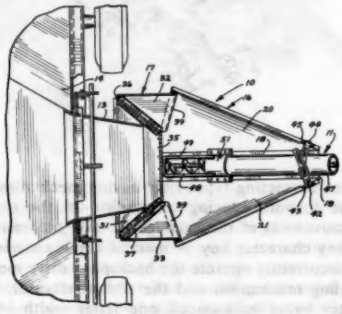
A conveyor for conveying workpieces comprising a rectilinear housing having a longitudinal axis, a rear or loading end and a front or unloading end, a plurality of equidistantly spaced apart forwarding members each mounted pivotally in the housing, each forwarding member having a rearward facing stop surface and a forwardly inclined transportation surface extending substantially parallel to the longitudinal axis along which workpieces are conveyed, the pivotal mounting of said forwarding members being effected such that the transportation surface is upwardly inclined in the direction of travel of workpieces in the stable position of the forwarding members and means for moving each forwarding member such that the transportation surface is transferred from the upwardly inclined position to a downwardly inclined position when workpieces are located thereon.

3,729,087

ADJUSTABLE RETRACTABLE AUGER HOPPER

Wesley W. Bruns, Route 2, Box 184, Gibbon, Minn.

Filed Feb. 17, 1972, Ser. No. 227,566
U.S. Cl. 198—122 **5 Claims**



An auger hopper is usable with a screw flight auger to convey granular material, such as grain, from one depository sta-

tion to another. The auger hopper has upwardly open bin means for temporarily holding the granular material as it is picked up by the auger. Adjustable inlet means are movably connected to the bin means and, in a normal configuration, releasably engage the bin means to close a front opening. The inlet means aids in guiding and deflecting granular material discharged from the first depository station to the hopper proper. Inlet means are movable inwardly to a position within the auger hopper proper to avoid damage as by collision when a truck is manipulated into discharge proximity of the hopper. Inlet means are movable outwardly of the auger hopper as to be out of the way when so desired.

3,729,088

ROLLER CONVEYOR

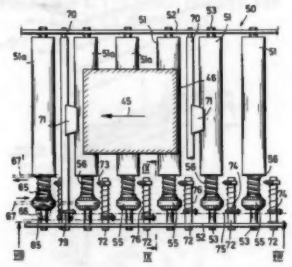
Hans Vom Stein, Wermelskirchen, and Dieter Specht, Dhunn, both of Germany, assignors to Hans Vom Stein OHG, Dhunn, Germany

Filed June 10, 1971, Ser. No. 151,645

Claims priority, application Germany, June 16, 1970, P 20 29 647.3; April 20, 1971, P 21 18 987.7

Int. Cl. B65g *13/02*

U.S. Cl. 198—127 R **12 Claims**



A plurality of rolling elements are mounted in a support longitudinally spaced and turnable about axes extending transversely to the elongation. A continuously operable drive turns one member of a clutch which is normally engaged. A sensing device normally projects beyond the general plane defined by the rolling elements and on which a load travels, and can be downwardly deflected when a load contacts it. A worm constitutes the other part of the clutch and drives a gear fast with one of the rolling elements. The worm can be disengaged, thereby disengaging the clutch, when the mechanical sensing arrangement is depressed by a load and thereby engages with the thread or screw on the worm, whereby the latter is caused to carry out axial displacement in a sense disengaging the clutch, by the force of the drive which normally drives the clutch.

3,729,089

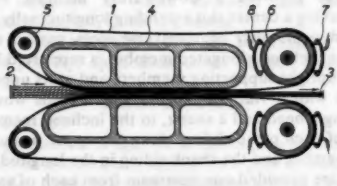
DEVICE IN BELT CONVEYORS

Into Isak Kerttula, Luotsikatu 18 B, and Per Arno Jantinen, Koivikkotie 12, both of Helsinki, Finland

Filed April 6, 1971, Ser. No. 131,669

Int. Cl. B65g *23/00*

U.S. Cl. 198—203 **1 Claim**



A device in belt conveyors intended to increase the friction between a conveyor belt and the traction roll about which the belt is entrained. Over the conveyor belt there is fitted a pressure chamber, which is open in the direction facing the belt and which presses the belt against the roll.

3,729,090

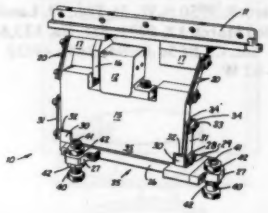
VIBRATORY STRAIGHT LINE FEEDER

Harold R. Hacker, 522 Woodview Drive, Noblesville, Ind.

Continuation of Ser. No. 33,439, April 30, 1970, abandoned. This application Nov. 22, 1971, Ser. No. 200,820

Int. Cl. B65g *27/00*

U.S. Cl. 198—220 CB **7 Claims**



A linear vibratory parts feeder including a counterbalance weight which is connected to a parts container by means of flat leaf springs. A motor drive is mounted on the counterbalance weight and is connected to the parts container for vibrating it. A pair of limit blocks are fixed to the base and have a complementary configuration to recesses in the counterbalance weight. A second set of flat leaf springs is fixed to the counterbalance weight and the limit blocks. The limit blocks prevent excessive damaging deformation of the second set of leaf springs during shipment and handling but do not interfere with actual operation of the parts feeder.

3,729,091

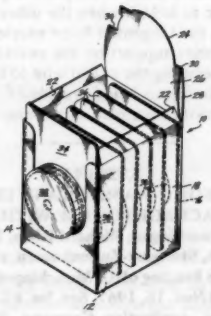
FISHING LINE DISPLAY-DISPENSER

Lester M. Davis, 1565 Center Street, Gig Harbor, Wash.

Filed Dec. 31, 1970, Ser. No. 103,149

Int. Cl. B65d *79/00, 73/00, 75/42*

U.S. Cl. 206—44.11 **2 Claims**



A fishing line display-dispenser is disclosed comprising a container having a top opening and a top panel movable into and out of closing position therewith. Within the container are a plurality of rectangular, two-ply cards standing on their ends. A transparent display cover is carried by each card and each comprises a circular or disc-shaped face, cylindrical side walls, and a flanged base. The face and side walls of the display cover extend through an opening in the card and the flanged base is adhered to the inner surface of the front ply of a card. The front wall of the container has an opening therein and the foremost card carries a display cover which is vertically movable into and out of registration with the opening in the front wall of the container. When in registration, the dis-

play cover projects through and outward of the front wall of the container. The size and shape of each display cover mates with the opening in the front wall of the container and each is preferably at least a fragment of a circle. A reel of fishing line is disposed in each display cover. The starting and terminal ends of the fishing line of each reel are brought out as free ends and into the space between the plies forming such cards and outwardly therefrom. The free terminal end of each reel extends to and is a continuous line with the free starting end of the fishing line on the next succeeding card in the container.

3,729,092

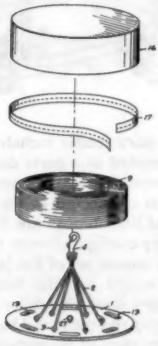
UNWIND SUPPORT FOR COILED WIRE

William B. Marcell, 3950 N.W. 36 Ter., Ft. Lauderdale, Fla.

Filed March 12, 1971, Ser. No. 123,699

Int. Cl. B65d *85/04*; **B65h** *49/22*

U.S. Cl. 206—52 W **6 Claims**



In order to unwind coiled wire, such as electrical wire, straight without kinks or knots, the coiled wire is supported on a base plate and the plurality of lines secured to the plate at points symmetrically arranged around the center of the plate converge and are secured together and connected to a clip which can be clipped into a swivel ring, which latter can be hung on a hook adapted to be hung from a rafter or pipe or the like; there are suitable holes in the plate engageable by an end of the coiled wire to hold it when the other end of the coil is unwound so that the tangential force exerted during unwinding rotates the entire support on the swivel; the lines can be utilized also for securing the coiled wire to the base plate during transportation, means being provided for manually carrying the base plate with the coiled wire thereon.

3,729,093

DISPENSER FOR C-WASHERS AND THE LIKE AND WASHER PACKAGE FOR USE WITH DISPENSER

Peter Benzing, Munchingen; Richard Klein, Berkheim, and Alfred Trampisch, Stuttgart-Zuffenhausen, all of Germany, assignors to Hugo Benzing oHG, Munchingen, Germany

Filed Nov. 16, 1967, Ser. No. 683,598

Claims priority, application Germany, Nov. 11, 1966, B 89975; Jan. 17, 1967, B 90764

Int. Cl. B65d *85/58, 85/62*

U.S. Cl. 206—65 R **3 Claims**

C-Washers are packaged in a tubular plastic envelope by sliding the washers over a carrier bar, inserting the coaxially stacked washers on the bar into a loosely fitting plastic tube, contracting the tube by shrinkage or otherwise until it conformingly engages the washers and secures them in aligned position, and withdrawing the carrier bar. The dispenser has a guide rail similar to the carrier and a cutting blade near one end of the guide rail and obliquely inclined relative to the direction of rail elongation which slits the tube when the stack of washers is slipped over the guide rail so that the tube may be peeled off.

3,729,094

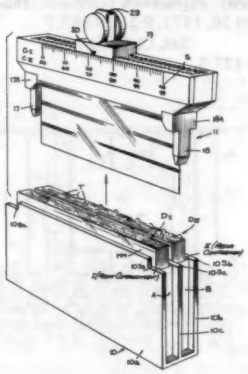
RANDOM-ACCESS CARD FILE SYSTEM

Stanley Engelstein, New York, and Isidore Dorman, Whitestone, both of N.Y., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 24, 1971, Ser. No. 118,455

Int. Cl. B07c *5/34*

U.S. Cl. 209—80.5 **11 Claims**



A random-access card file system formed by cartridges for storing the cards and a card file selector adapted to cooperate with the cartridges to extract any desired card therefrom, regardless of its position therein. Each cartridge is capable of accommodating a deck of cards, each of which includes an upstanding tab whose longitudinal position with reference to a selector scale extending the full length of the deck is determined by its master index identification. The selector is provided with a carriage movable along a linear track to any desired incremental point on the scale, the carriage supporting a tab-engaging member or picker, whereby when the selector is placed over the cartridge, the picker engages and grips any tab in registration therewith, and when the selector is thereafter lifted, the tab-held card is extracted from the deck.

3,729,095

APPARATUS FOR SORTING BY LENGTH UP-SET HEADED PIECES SUCH AS NAILS AND THE LIKE

Earl L. Carr, and James E. Foster, both of Antioch, Calif., assignors to United States Steel Corporation, Pittsburgh, Pa.

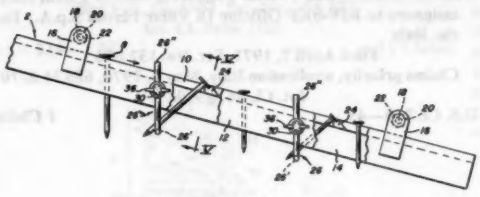
Filed Dec. 28, 1971, Ser. No. 213,059

Int. Cl. B07b *13/04*

U.S. Cl. 209—90 **6 Claims**

Apparatus involves a downwardly inclined elongated member having a center slot extending longitudinally along its length and a plurality of transverse slots spaced along its length. The inclined elongated member is supported by a pair of spaced upright supporting members and at its upper end is connected with a vibratory feeder which feeds workpieces, each having a head and a shank, to the inclined member with the head of each piece sliding along the upper surface of the inclined member and the shank riding in the longitudinal slot. Trip dogs are provided one upstream from each of said transverse slots which are disposed at progressively lesser distances

from the bottom of the inclined member starting at the upper end thereof. The trip dogs trip pieces having a shank length greater than the distance from the bottom surface of the



inclined member to the trip dog to tilt the workpiece. The transverse slots are dimensioned to receive and cause to drop through the inclined member workpieces engaged with their heads in tilted position.

3,729,096

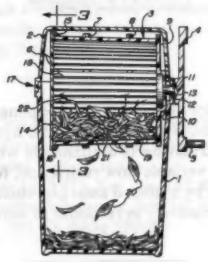
APPARATUS FOR PROCESSING HERBS AND THE LIKE

Marcel Fitzner, 3003 East Ina, Tucson, Ariz., and John D. Butler, 211 West Franklin, Tucson, Ariz.

Filed June 2, 1972, Ser. No. 259,249

Int. Cl. B07b *1/22*

U.S. Cl. 209—97 **5 Claims**



In order to separate the leaves of a herb or herblike plant from the seeds and twigs thereof, a longitudinally slatted cylindrical container is filled with the unprocessed plants, and the cylinder is then disposed in an outer container such that it may be rotated about its axis. The separation between adjacent slats is predetermined to be no larger than the smallest seeds which might be expected within the unprocessed mixture. As the cylinder is rotated, the leaves drop into the outer cylinder leaving the seeds and any twigs within the cylinder. For fabrication purposes, the cylinder may actually take the form of a very slightly tapered truncated cone, which shape provides draft for removal of the cylinder from its fabrication mold.

3,729,097

FILTRATION OF MOLTEN METAL

Donald Louis William Collins, Rugby, Warwickshire, and Brian Arthur Gillett, Banbury, Oxfordshire, both of England, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

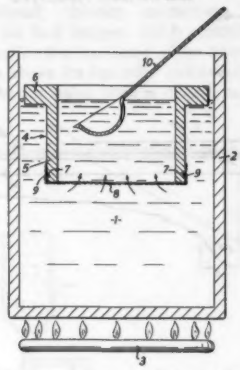
Filed March 29, 1971, Ser. No. 128,876

Claims priority, application Great Britain, April 1, 1970, 15,536/70

Int. Cl. B01d *35/28*

U.S. Cl. 210—69 **4 Claims**

In the production of light metal castings by manual methods molten metal is drawn in a ladle from a pool of metal within a filter floating freely in a body of molten metal in a holding furnace. The filter comprises a body made of a material which is not attacked by the molten metal and is provided with one or more apertures at or near the bottom end, these apertures



being covered with filter material so that solid inclusions are removed from molten metal entering the filter body.

3,729,098

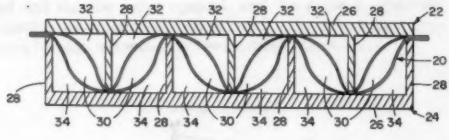
TREATING BLOOD

Juan Ricardo Serur, 34A Harvard Avenue, Brookline, Mass.

Filed Feb. 8, 1971, Ser. No. 113,568

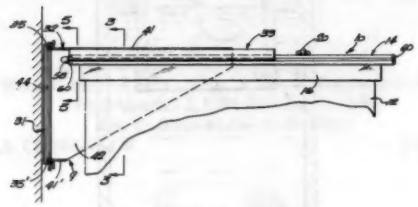
Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **7 Claims**



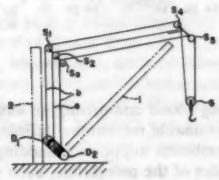
Device for treating blood comprising an elongated tubular member of semi-permeable membrane defining a blood flow path, a pair of membrane supports extending adjacent the path on opposite sides of the membrane, each support having a series of protuberances extending longitudinally of the support and spaced across the width of the support, the protuberances of one support being spaced between and overlapping the protuberances of the other support to cause the tubular member to assume a zig-zag form across its width, the supports and the tubular member defining a multiplicity of flow channels outside the tubular member and extending along the path; blood inlet and outlet members adjacent opposite ends of the tubular member and communicating exclusively with the interior thereof; and treatment fluid inlet and outlet members adjacent opposite ends of the tubular member and communicating exclusively with the exterior thereof.

3,729,099
VERTICAL FILING APPARATUS
Victor J. Kritske, Sheboygan, Wis., assignor to Mayline Company, Inc., Sheboygan, Wis.
Filed Feb. 14, 1972, Ser. No. 226,106
Int. Cl. A47f 5/08, 7/16
U.S. Cl. 211—46 7 Claims



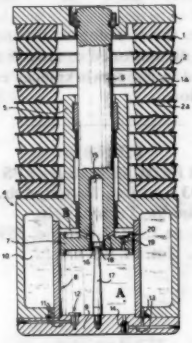
The apparatus includes a clamp assembly for holding at least one sheet of material in a vertical zone and a bracket assembly on which the clamp assembly is removably mounted. The clamp assembly includes a longitudinal member which has a longitudinally extending groove in each side. The bracket assembly includes a support member having, at its lower side, inturned flanges dimensioned for positioning in said grooves. A plastic end cap at each end of the longitudinal member also has longitudinally extending grooves therein; however, the top wall of the groove is disposed below the corresponding top wall of the groove in the longitudinal member to provide a bearing surface for riding on the inturned flanges during insertion and removal of the longitudinal member on the support member.

3,729,100
CRANE
Jiro Tanabe, No. 7, 3-chome, Kanda-Ogawa-cho, Chiyoda-ku, Japan
Filed April 23, 1971, Ser. No. 136,816
Claims priority, application Japan, April 24, 1970, 45/35299
Int. Cl. B66c 23/06
U.S. Cl. 212—58 4 Claims



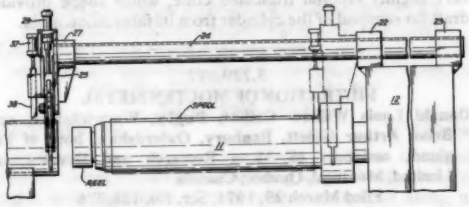
A crane wherein the lower end of a boom is so pivoted as to permit not only the slanting motion but also swinging or revolving motion of the boom, and one rope is employed not only for slanting the boom and but also for hoisting the loads while the swinging or revolving motion of the boom is effected by a single pressure cylinder whose leading end is coupled to the mid portion of the boom.

3,729,101
DAMPER DEVICE FOR RAILWAY VEHICLE AUTOMATIC COUPLINGS
Guido Brambilla, and Vittorio Fogliacco, both of Turin, Italy, assignors to RIV-SKF Officine Di Villar Perosa S.p.A., Turin, Italy
Filed April 7, 1971, Ser. No. 132,026
Claims priority, application Italy, May 4, 1970, 68534 A/70
Int. Cl. B61g 9/08
U.S. Cl. 213—45 1 Claim



A damper device for automatic couplings in railway vehicles has elastic and hydraulic parts, the hydraulic part being double-acting and having two chambers which are interconnected through a variable flow restriction, for example a nozzle formed in part by a shaped axial pin, such that the damping force varies progressively in response to movement applied to the device.

3,729,102
SPOOL AND COIL HANDLING DEVICE FOR A ROLLING MILL
Charles Storer Shumaker, Glenshaw, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed April 13, 1971, Ser. No. 133,568
Claims priority, application Great Britain, May 29, 1970, 26,141/70
Int. Cl. B65g 65/08
U.S. Cl. 214—1 BB 1 Claim



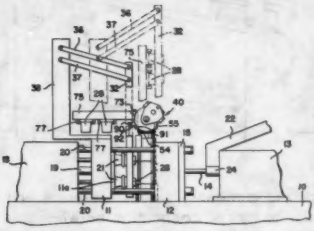
The disclosure of this invention relates to an handling device for spools or similar cylindrical tubular members as used, for example, for winding metallic strip material produced by a rolling mill.

3,729,103

TRANSPORTER FOR MOLDED PARTS AND THE LIKE

Herbert Rees, Toronto, Ontario, Canada, assignor to Husky Manufacturing & Tool Works Ltd., Botton, Ontario, Canada

Filed Feb. 16, 1971, Ser. No. 115,373
Int. Cl. B66c *1/30*
U.S. Cl. 214—1 BC 11 Claims



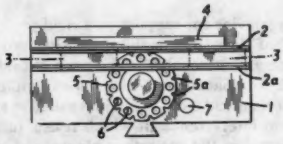
A take-off plate insertable from above between the relatively movable mold portions of an injection-molding machine cooperates with a transfer plate cantilevered on a transverse shaft at the top of a column rotatable through 180°. The shaft carrying the transfer plate is coupled by a step-down bevel-gear transmission with a fixed tube surrounding the rotatable column so that this plate turns through 90° during each 180° swing. In its vertical position, the transfer plate confronts the elevated take-off plate and removes from it the newly formed article or articles extracted from the mold; these articles are held by grippers which are deactivated in a horizontal position of the swung-out transfer plate to release the articles into an underlying receptacle therefor.

3,729,104

WORK-TRANSPORT APPARATUS

Taisuke Takiguchi, Funabashi, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed July 14, 1971, Ser. No. 162,494
Claims priority, application Japan, July 14, 1970, 45/61041
Int. Cl. B65g *59/06*
U.S. Cl. 214—8.5 K 4 Claims



A work-transport method and apparatus for transporting workpieces, such as watch movement assemblies, in stacked relationship in individual compartments of a work container moved reciprocably over a rotary work table. The workpieces are held in frames within the compartments. The frames are removed automatically from the compartments individually and inserted in work-receiving openings or holes in the rotary table. The workpieces are then automatically returned after work operations have been performed thereon, to the original compartment in which the workpieces were stored and removed therefrom.

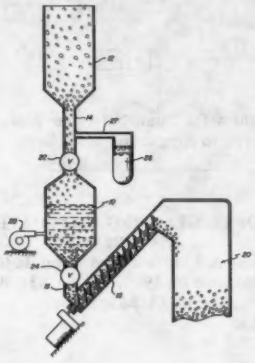
3,729,105

LIQUID SEALED SOLIDS LOCK HOPPER

Jack Huebier, Deerfield; Sanford A. Weil, Chicago, and Paul B. Tarman, Elmhurst, all of Ill., assignors to The Institute of Gas Technology, Chicago, Ill.

Filed Sept. 27, 1971, Ser. No. 184,045
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 B 6 Claims

A method and apparatus for transferring solid materials between zones at substantially different pressures which includes, generally, an intermediate vessel or lock hopper which contains a liquid and can be filled with an emptied of solids, two valves, one at each end of the lock hopper, a solids feed device, and a pump to maintain liquid level in the system. In operation, the valve at the upper end of the lock hopper is opened while the valve at the lower end thereof is closed, thereby permitting solids to be transferred into the lock hopper which contains a liquid such as water. The solids displace some of the liquid, and the displaced liquid rises above the top valve and overflows into a collecting vessel. The top valve then is closed, and a pump



adds or removes liquid until the pressure in the lock hopper is close to the reactor pressure. The lower or bottom valve is opened after the pressure differential is compensated for, allowing the solids to drop into a feeder which conveys the solids to the reactor. The liquid level in the feeder and the lock hopper is maintained by the pump to replace the volume of solids fed. This liquid level is maintained at a sufficient height to inhibit gas flow into the lock hopper, and is independent of operating pressures. After solids discharge, the bottom valve is closed and the top valve opened, and the cycle is repeated. For continuous solid feed, two or more valved lock lock hoppers can be used in tandem to feed solids to the feeder.

3,729,106

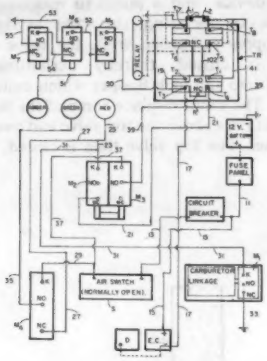
SAFETY APPARATUS FOR GARBAGE TRUCKS

Frank Barbieri, 62 Alabama St., Long Beach, N.Y.

Continuation-in-part of Ser. No. 870,704, July 7, 1969, abandoned, Division of Ser. No. 732,252, May 27, 1968, Pat. No. 3,503,531. This application April 29, 1971, Ser. No. 138,637
Int. Cl. B65f *3/00*
U.S. Cl. 214—83.3 7 Claims

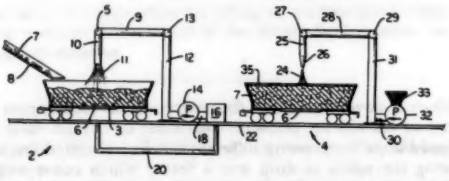
Safety apparatus for controlling refuse packing cycles in a garbage truck, said garbage truck having a transmission and a refuse packing assembly in operative association with one another, said transmission having a plurality of operative positions. The safety apparatus comprises a first system operatively associated with the transmission for initiating a refuse packing cycle, a second system operatively associated with the transmission when the latter is in one of the operative positions for permitting the refuse packing cycle to continue to

normal completion, and a third system operatively associated with the transmission when the latter remains in another of the



operative positions for immediately terminating the refuse packing cycle prior to completion of the latter.

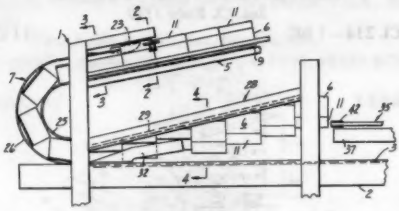
3,729,107
A METHOD OF COMPACTING AND COATING REFUGE MATERIAL
Mortimer T. Present, 535 West 73rd Street, Indianapolis, Ind.
Filed June 20, 1969, Ser. No. 835,090
Int. Cl. B65g *3/04*
U.S. Cl. 214—152 **7 Claims**



A refuse handling system wherein refuse is placed in a container and compacted with a steam of water. After compacting the refuse is coated with a homogeneous film of a foamed polymeric material. The polymeric material can comprise any suitable resinous material. The container for use in this invention can be a wheeled vehicle. Compacted bails of refuse material and other goods in containers can be coated in accordance with this invention.

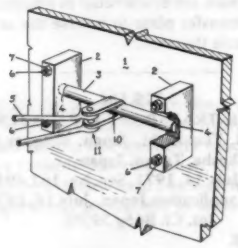
3,729,108
CASE DUMPER
Harold B. Rice, Walnut Creek, Calif., assignor to John Burton Machine Corporation, Concord, Calif.
Filed Dec. 2, 1970, Ser. No. 94,403
Int. Cl. B65b *21/02, 69/00*
U.S. Cl. 214—304 **7 Claims**

The contents of an unsealed conventional paperboard case are removed by passing the case along a path of travel with its top uppermost, automatically opening the side flaps by means of guides, passing the case along a generally semicircular path of travel to invert the same, conveying the case in an upwardly slanting path while the articles contained in the case are moved along a generally horizontally extending conveyor and thereafter turning the case 180 degrees to again bring the top uppermost. The unsealed case is squeezed at its sidewalls at points adjacent the top of the case to automatically raise the side flaps and a fixed guide is employed to swing the side flaps to laterally outwardly extending positions so that the subsequent step of emptying the case may be performed by gravity while the case is being moved along the upwardly slanting path. The final step of turning the case is performed by gripping one of the side flaps between adjacent runs of two



conveyors and stationary guides are employed to swing the case about the hinged connection between said flap and the body of the case.

3,729,109
ASSEMBLY WITHIN A BRACKET FOR A PROJECTION SCREEN
Ronald E. McCurdy, 275 Jeffcoat Drive, Rexdale, Ontario, Canada
Filed June 14, 1971, Ser. No. 152,608
Int. Cl. A47g *1/24*
U.S. Cl. 248—487 **4 Claims**

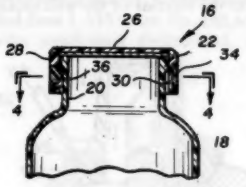


A mounting device for supporting a rigid projection screen, constructed of low to medium density polyethylene or polypropylene and attachable to the back of said screen comprising a pair of spaced mounting blocks attachable to the back of the screen and a hinge pin journalled in said mounting blocks with an interference fit which resists relative rotative movement between the mounting blocks and the hinge pin and a wall bracket having one end fastened to the hinge pin and the opposite end attachable to a wall. This device utilizes the self lubricating quality of the construction material to allow a projector screen to which the device is attached to be moved from one position to another within limits about the axis of the hinge.

3,729,110
SAFETY CLOSURE FOR VIALS
Clarence R. Taylor, 28 Woodside Dr., Penfield, N.Y.
Continuation-in-part of Ser. No. 89,872, Nov. 16, 1970, abandoned. This application Feb. 25, 1971, Ser. No. 118,673
Int. Cl. B65d *55/02*
U.S. Cl. 215—9 **9 Claims**

A safety closure for containers such as vials or the like, each having a preferably tubular mouth with an outer peripheral rim. The safety closure comprises a cup-shaped cap mountable on the mouth and having a projection that is movable between a normal unlatched position in which the projection is free to move in a radial direction and hence does not prevent removal of the cap from the mouth, and a latched position in which the projection is locked in place behind and in alignment with the rim and prevents removal of the cap

from the mouth. The surfaces of the projection and rim are preferably shaped to interact and provide a camming action



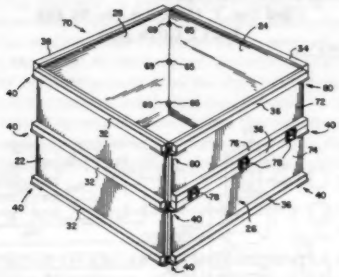
for positively forcing the cap into sealing engagement with the mouth.

3,729,111

COLLAPSIBLE CONTAINERS INCLUDING SWIVEL HINGE CORNER ASSEMBLY AND ACCESS DOOR ASSEMBLY

William J. Farnsworth, McComb, Miss., assignor to Altamil Corporation, Indianapolis, Ind.

Filed Feb. 16, 1907, Ser. No. 115,302
Int. Cl. B65d *9/14*
U.S. Cl. 217—16 **15 Claims**



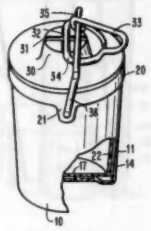
A collapsible container is provided comprising a pair of rectangular side panels and a pair of rectangular end panels with horizontal cleats mounted on the exterior surfaces of the panels and a plurality of swivel hinge corner assemblies located at the corners of the collapsible container and secured to the cleats for pivotally connecting adjacent side panels and end panels to permit the container to collapse. Each corner assembly includes a pair of corner plates, each plate having a flat body to be secured to one of the cleats and a prong projecting laterally from one edge of the flat body to overlap the prong projecting from the other plate. The prongs of the corner plates are pivotally connected at a point spaced laterally from the edges of the flat bodies of the corner plates to permit adjacent sides at opposite corners of the container to be folded either inwardly or outwardly to collapse the container. In addition, an access door assembly is provided for pivotally connecting a door to adjacent sides of a collapsible container and permitting the door to be unlatched from the adjacent sides. The access door assembly includes a pair of corner plates that are identical to the corner plates of the swivel hinge corner assembly and a spring catch for releasably engaging openings formed in the prongs of the corner plates to pivotally connect the prongs to permit the sides of the container to collapse and the corner plates to be unlatched.

3,729,112

COMPOSITE CONTAINER

Robert K. Gibbs, 105 Hancock St., Henderson, Ky.

Filed May 6, 1971, Ser. No. 140,753
Int. Cl. B65d *25/14, 45/16*
U.S. Cl. 220—17 **3 Claims**



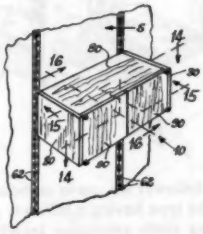
A molded plastic container having a body member and a cap therefore employs a thin wall expendible inner liner for retaining the contents of the container. Rigidity of the body member and tight sealing of the cap against the liner and the body member is obtained by design features compatible with injection molding techniques.

3,729,113

MODULAR CABINET ASSEMBLY, AND COMPONENTS AND SUBASSEMBLIES THEREFOR

Dale R. Lopatka, Hawthorn Woods, Ill., assignor to Reflector Hardware Corporation

Filed July 8, 1971, Ser. No. 160,662
Int. Cl. B65d *25/24*
U.S. Cl. 220—18 **18 Claims**



A modular cabinet assembly and components and subassemblies therefor. A sheet metal, L-shaped, back-bottom member provides a pair of longitudinal walls and integral mounting flanges at each side of each wall. The longitudinal edges of the walls are folded to form rigidifying finish edges. Side panels and brackets defining hooks are securable to the mounting flanges to provide a cabinet subassembly which may be hung from slotted supports. The other two longitudinal sides may be closed by a closure panel mounted to angles secured to the side panels, and an openable door. The openable door may be of a variety of types, selectively to provide a plurality of cabinet assemblies, each with an assemblage of identical subassembly components.

3,729,114

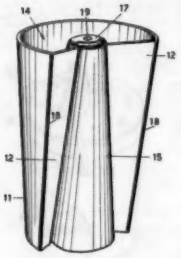
CONTAINER

Enzo Mari, Piazzale Baracca, Milan, Italy

Filed Aug. 28, 1970, Ser. No. 67,957
Claims priority, application Italy, Sept. 2, 1969, 21562 A/69
Int. Cl. B65d *1/24*
U.S. Cl. 220—20 **2 Claims**

A container is disclosed which essentially comprises two containing receptacles, the mouths of which are placed in op-

posite directions relative to a common axis of reference. The mouths have different widths so that one of them can accommodate larger objects, whereas the other can accommodate



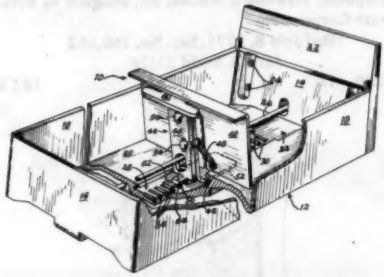
smaller objects, for example bunches of flowers and individual flower stalks. Plastics material is preferred for embodying the subject container.

3,729,115

CARD TRAY FOLLOWER

Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.

Filed Dec. 29, 1971, Ser. No. 213,253
Int. Cl. B65d *1/24*
U.S. Cl. 220—22.3 **5 Claims**



An improved follower for use in association with a card file or like tray of the type having a follower guide track and follower positioning teeth extending lengthwise of its bottom wall. The follower features a latching mechanism including a vertically reciprocating latch flange, which is normally spring biased downwardly for locking engagement with the positioning teeth. The latch flange carries adjacent its lower end a rearwardly directed flange defining a downwardly facing convex cam surface dimensioned to be received within a space between adjacent teeth and a pair of coplanar supporting surfaces. The supporting surfaces forwardly and rearwardly bound the cam surface to normal reside in engagement with upwardly facing edges of the teeth, whereby to limit the extent to which the cam surface projects into the space between the teeth.

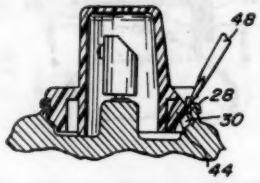
3,729,116

REUSABLE TAMPERPROOF CAP FOR AEROSOL DISPENSING CONTAINERS

Edward H. Green, Addison, and Herbert Benedict, Park Forest, both of Ill., assignors to Edward H. Green, Addison, Ill.

Continuation-in-part of Ser. No. 817,302, April 18, 1969. This application Jan. 6, 1970, Ser. No. 104,434
Int. Cl. B65d *43/10, 51/18*
U.S. Cl. 220—60 R **17 Claims**

A reusable, tamperproof cap is provided for an aerosol container having a spray nozzle located in a well in its top. The cap comprises an inner body portion that surrounds and protects the spray nozzle; a circular rim extending radially from the body; and an outer skirt portion that depends from the rim and fits within the interior of the well. Interlocking means comprising a protrusion on the exterior of the skirt that engages a groove in the interior of the well locks the cap in the well and prevents manual removal of the cap from the container without the use of a tool. A vertical opening is provided through the rim so that a suitable prying tool may be inserted downwardly into the vertical space between the cap and the inner side surface of the well, whereupon a downwardly rotating prying action will disengage the interlocking means and remove the cap from the container.

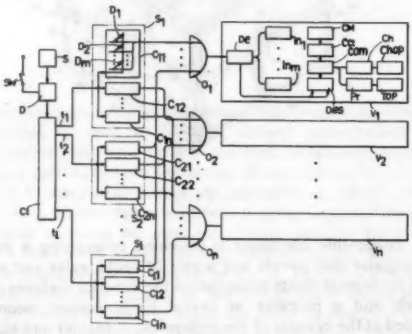


3,729,117

AUTOMATIC VENDING MACHINE CONTROL SYSTEM

Nobuyoshi Naito; Tsuyoshi Hiraguri; Katsunori Yamashita, 1-273 Koazawakiyama, Azaenmyoji, all of Otokuni-gun, and Oomi Honda, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Dec. 7, 1970, Ser. No. 95,458
Int. Cl. G07b *1/00*
U.S. Cl. 221—9 **8 Claims**



An automatic vending machine comprising a display panel and vending means capable of dealing with a plurality of kinds of tickets for traffic facilities (simply referred to as "multi-performance machine") is controlled to a less-multi-performance machine or a single-performance machine by means of a setting means, wherein less plurality of kinds or a single kind of ticket are dealt with.

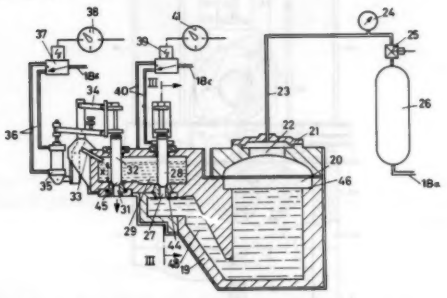
As another embodiment of the invention a plurality of multi-performance machines are installed to provide a group of vending machines and a time sequence programmer is provided for controlling the performance of the machine and also for controlling the number of the machine to be actuated.

The performance and/or number of the machine is displayed on the display panel. An embodiment of the display panel comprises a plurality of indication elements which can be controlled to turn on or off and the panel is controlled by the on-or-off control of the element to provide a plurality of display states.

3,729,118
DEVICE FOR CONTROLLING THE LEVEL OF LIQUID METAL IN A CASTING CONTAINER

Max Wernli, and Hans Tanner, both of Schaffhausen, Switzerland, assignors to Erwin Buhrer, Schaffhausen, Switzerland

Filed June 1, 1971, Ser. No. 148,634
Claims priority, application Switzerland, June 1, 1970, 8150/70
Int. Cl. B22d *37/00*
U.S. Cl. 222—56 4 Claims

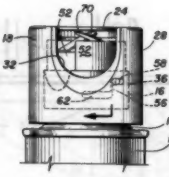


A casting system having a container for a liquid casting material comprising a receiving or entry chamber and an exit or dispensing chamber, a passage interconnecting the entry and exit chambers at their bottom portions, means for supplying a gaseous medium under pressure to the entry chamber for translating the liquid metal between the entry and exit chambers and for regulating the level of the liquid metal therein at a predetermined constant level, the liquid metal in the entry chamber being disposed at a level below the bottom of the exit chamber, and a controllable stopper arrangement disposed in the exit chamber for controlling the dispensing of the liquid metal therefrom.

3,729,119
CHILDPROOF OVERCAP WITH HORIZONTAL SPRAY

James J. Sette, Morristown, and Neil Nix, River Edge, both of N.J., assignors to Sterling Drug Inc., New York, N.Y.

Filed May 11, 1971, Ser. No. 142,316
Int. Cl. B65d *83/14*
U.S. Cl. 222—153 10 Claims

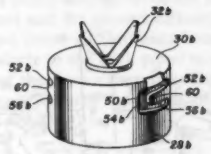


An aerosol having a captive safety overcap which must be rotated, axially depressed, and once again rotated, with respect to the aerosol, to allow operation of the conventional button for actuating the aerosol valve. The overcap is provided with an opening which in the safety position is misaligned with respect to a button access opening in an inner cap, but when turned, depressed, and turned again, the openings are aligned so that a finger may be inserted and the valve button depressed for operating the aerosol.

3,729,120
CHILDPROOF RELOCKABLE ACTUATOR OVERCAP

James J. Sette, Morristown, and Neil Nix, River Edge, both of N.J., assignors to Sterling Drug Inc., New York, N.Y., by said Nix

Filed May 11, 1971, Ser. No. 142,317
Int. Cl. B65d *85/14*
U.S. Cl. 222—153 15 Claims



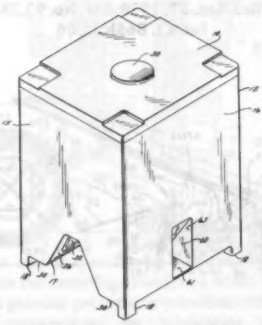
An aerosol having a stem for the actuation of the usual valve thereof, and a captive safety overcap which must be rotated, axially depressed, and rotated again with respect to said aerosol, to operate the stem. The overcap has a base that has an opening aligned with a spray orifice in the stem and includes means to move the stem to actuate it upon the manipulation stated.

When properly positioned to actuate the aerosol, the overcap is locked maintaining the aerosol in its spraying operation without attention, and the manipulation of the overcap must be reversed to stop the spray action.

3,729,121
BOTTOM DISCHARGE BIN AND DUST TIGHT UNLOADING STATION THEREFOR

Robert B. Cannon, 40 Woodhull Place, Northport, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,169
Int. Cl. B67d *5/06*
U.S. Cl. 222—185 4 Claims



A bottom discharge material storage and handling apparatus having a discharge station adapter and transportable bins. The bins are containers each having an opening in a top and two discharge doors mounted on an inverted V-shaped bottom. A cam locking assembly is associated with each of the discharge doors for locking the doors in a closed position. The discharge station adapter has upstanding walls attached to a base and contoured to receive the V-shaped bottom of a bin and to form a dust tight seal therebetween. The base has an opening formed therein and positioned below the discharge doors of the bin. A shaft is rotatably mounted between two opposed upstanding walls and has a closing cam fixedly attached thereto and positioned for simultaneously engaging and urging both doors to a closed position when the shaft is rotated.

3,729,122

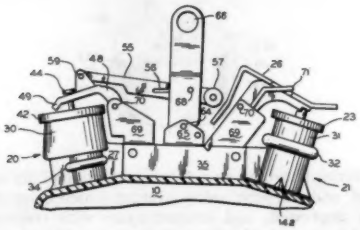
SAFETY CONTAINER FOR INFLAMMABLES

Frank S. Flider, Chicago, Ill., assignor to Justrite Manufacturing Company, Chicago, Ill.

Continuation-in-part of Ser. No. 97,713, Dec. 14, 1970, and a continuation-in-part of Ser. No. 98,557, Dec. 16, 1970. This application May 27, 1971, Ser. No. 147,345

Int. Cl. A47g *19/14*

U.S. Cl. 222—469 10 Claims



A completely enclosed plastic container has two openings or vents. One vent has an internal valve and a pouring spout attached thereto. The other vent has a spring biased safety cap which raises for filling or to vent vapors when the internal pressure exceeds some predetermined level. A handle linkage controls the two vents so that the pouring valve opens first and the venting safety cap opens second, as the can is tipped. Suitable springs urge the valve, cap and handle to an automatically closed position when the container is sitting at rest. The handle linkage is attached to a vertical fin formed between the two vents by an enlargement of the flash line formed in molding the container.

3,729,123

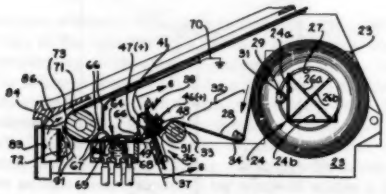
PRINTING MACHINE AND METHOD

William A. Lloyd, San Jose, Calif., assignor to Versatec, Inc., Cupertino, Calif.

Filed Nov. 27, 1970, Ser. No. 93,256

Int. Cl. B65h *25/06*

U.S. Cl. 226—7 1 Claim



A printing machine wherein a pliable record material wrapped to form a supply roll includes means for recording information upon the record material, an upwardly inclined platen supports and guides the record material upwardly, and means for feeding the material engages same at the lower end of the platen and serves to push the pliable material up the platen. An air stream impinges upon the material while the material is moving upwardly across the platen to maintain the material in a flattened state against the platen preventing buckling thereof during its upward travel. A method of feeding a record material upwardly along an inclined plane includes the steps involved above. The supply roll is mounted upon a readily removable support providing a modest restraint from within the core of the supply roll. A fountain of developing toner fluid is disposed to contact the recording material immediately upstream of an upwardly extending wiping means for removing excess toner fluid from the web of recording material when drawn thereacross.

3,729,124

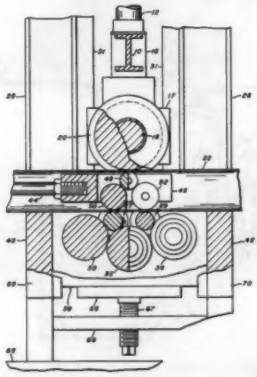
APPARATUS FOR REDUCING THE WELD BUILD-UP ON SEAM WELDED TUBING

Edward S. Kedzior, Northford; Thomas J. Latham, Jr., Wallingford, and John Boris, Meriden, all of Conn., assignors to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed April 5, 1971, Ser. No. 131,203

Int. Cl. B23k *5/22*

U.S. Cl. 228—19 5 Claims



Apparatus for reducing weld build-up on seam welded tubing by the use of interior and exterior pressure rolls. The exterior pressure rolls are of the hourglass-type and engage opposite sides of the tubing, one of the exterior hourglass rolls having a center line in contact with the exterior of the seam weld. The interior rolls, usually three in number, are carried on a mandrel, two of the three rolls being concave in configuration and engaging the inner surface of the tubing opposite the weld. The third interior roll is backed up by the first two and engages the inner side of the weld. This third roll is convex, conforms to the inner periphery of the tube, and is on the center line and directly opposite the hourglass roll which engages the exterior of the weld.

3,729,125

TACK-WELDING METHOD AND INSTALLATION

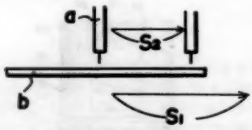
Masaaki Hano, Yokohama, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1970, Ser. No. 66,844

Claims priority, application Japan, Sept. 6, 1969, 44/70466

Int. Cl. B23k *29/00*

U.S. Cl. 228—26 7 Claims



A tack-welding method and installation according to which work which is tack-welded by one tack-welding unit will be supplied to a plurality of welding machines. The work is fed in a given direction at a given speed which is too great for any one welding machine, and the tack-welding unit is reciprocated back and forth along a path parallel to that along which the work moves. At least while the tack-welding unit is moving in the same direction as the work, it is maintained at a speed sufficiently different from the work speed to provide between the work and the tack-welding unit a relative speed suitable for tack-welding, and only during this movement of the tack-welding in the same direction as the work are the

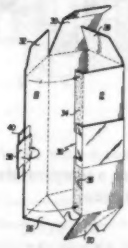
tack-welding operations carried out. A distributing structure receives the work from the tack-welding unit and distributes the work to the plurality of welding machines.

3,729,126

DECORATIVE CARTON WITH REMOVABLE BAND AND BLANK THEREFOR

Gary M. Donahue, Richmond, Va., assignor to Reynolds Metal Company, Richmond, Va.

Filed Jan. 18, 1972, Ser. No. 218,800
Int. Cl. B65d *5/10*
U.S. Cl. 229—38 **5 Claims**



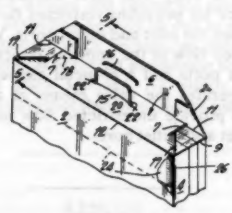
A decorative carton with a removable plastic band and carton blank therefor. The carton blank is provided with a glue flap panel attached to an endmost main body panel with the glue flap panel having a notched out portion intermediate its ends. A tab which substantially corresponds in size and location to the notched out portion in the glue flap panel is attached to the main body panel most remote from the one to which the glue flap panel is attached. This provides for nesting of adjacent blanks when the blanks are cut from strip stock material. The decorative plastic band extends transversely of the main body panels but is unattached thereto. One terminal end of the plastic band is attached to the tab and the other terminal end is attached to the glue flap panel adjacent its notched out portion. When the carton blank is assembled into an upright carton, the terminal ends of the removable plastic band are received within a longitudinal side seam of the carton.

3,729,127

PAPER BOX CONSTRUCTION

Samuel Kleinhaut, Forest Hills, N.Y., assignor to Bagprint Ltd.

Continuation-in-part of Ser. No. 155,202, June 21, 1971, abandoned. This application Sept. 8, 1971, Ser. No. 178,679
Int. Cl. B65d *5/46*
U.S. Cl. 229—52 A **11 Claims**



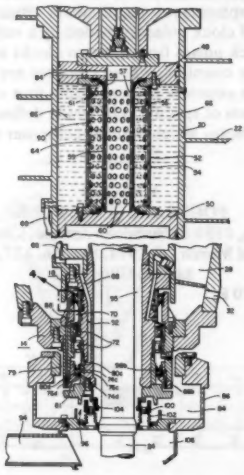
A generally rectangular paper box having first and second closure panels with side webs between the panels at the upper end of each of the sides, a first stiffener on the first panel and a second stiffener on the second panel, the first panel adapted to underlie the second stiffener in order to close the box, the second stiffener and second panel having triangular cut-out sections, one leg of each of the triangles being at an angle to the web adjacent thereto and spaced apart therefrom, the leg being inclined away from the web adjacent thereto in the upward direction. There is also provided a centrally located longitudinal slot in the first panel and the first stiffener, an opening in the second panel and the second stiffener which is at least partly in register with the slot when the box is closed, a handle having a stop which bears against the underside of the first stiffener, the handle projecting through the slot and adapted to pass through the hole when the box is closed. The first stiffener and panel are folded substantially perpendicularly to the front panel and the webs are folded inwardly to abut the first panel and the second stiffener, thereby forming points, the second panel and stiffener being folded substantially perpendicularly to the back panel to close the box. In a preferred form of the device there are slits in the first panel and stiffener through which the points pass so that they lie beneath the first panel.

3,729,128

HIGH PRESSURE CENTRIFUGE LUBRICATION SYSTEM

Karl Gardner Reed, Wayne, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sept. 23, 1971, Ser. No. 182,999
Int. Cl. B04b *1/00*
U.S. Cl. 233—7 **12 Claims**



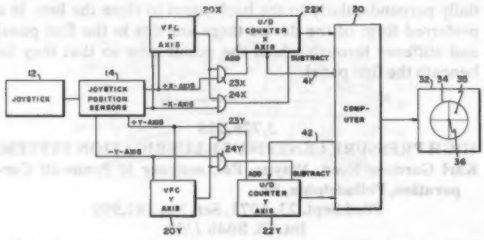
A centrifuge of the type having an internal helical screw conveyor within the centrifuge bowl, and which is subjected to a high internal gaseous pressure, is provided with a lubricating and sealing arrangement for lubricating the conveyor bearings, i.e., the bearings located between the centrifuge bowl and the conveyor. This arrangement includes a rotatable reservoir chamber located within the conveyor, which contains a reserve supply of lubricant, the lubricant being supplied via a passageway to the bearing cavity during operation of the centrifuge via the action of centrifugal force upon the lubricant supply. The chamber includes a flexible wall which is subjected to the internal gaseous pressure, thus transmitting this pressure throughout the lubricant to the bearing cavity. The bearing seals are subjected directly to the gaseous pressure on the exterior surfaces thereof, while the gaseous pressure is transmitted to the internal surfaces thereof via the flexible wall and lubricant. Thus, the pressure is substantially equalized on opposite sides of the bearing seals which results in better sealing. In addition, a collection chamber is provided to collect the total volume of lubricant within the reservoir chamber which will eventually leak past the bearing seals.

3,729,129

NUMERICAL COMPUTER PERIPHERAL INTERACTIVE DEVICE WITH MANUAL CONTROLS

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; Arthur I. Zygielbaum, 115 S. Monterey Street No. 4, Alhambra, Calif., and Stanley S. Brokl, 728 Orange Grove No. 1, Pasadena, Calif.

Filed June 22, 1971, Ser. No. 155,565
Int. Cl. G06m 3/14
U.S. Cl. 235—10.2 3 Claims



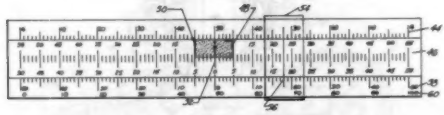
A computer peripheral device is disclosed which includes a joystick whose displacement from a center position along two axes X and Y in either a plus (+) or a minus (−) direction is sensed. The displacement magnitude in either direction controls the rate of clock pulses provided by a variable frequency clock. The clock pulses from the two clocks are accumulated in two separate counters, whose contents are displayed. The contents of the counters are suppliable to a computer to update the contents of specific cells which define the position of a cursor on a display which is under computer control.

3,729,130

FOOTBALL SLIDE RULE

Milton H. Bortz, 1550 Shenandoah Avenue, Cincinnati, Ohio

Filed March 24, 1971, Ser. No. 127,459
Int. Cl. G06g 1/02
U.S. Cl. 235—70 R 6 Claims



Slide rule device for use in connection with a football game, including a scale laid out to correspond to the yard line markers on a football playing field, an indicator for marking the starting position of a ball on the playing field, and a movable calculating member for determining distances on the playing field with respect to the starting position of the ball.

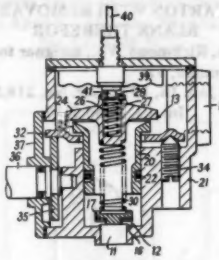
3,729,131

THERMOSTATICALLY CONTROLLED GAS VALVE

Eric McGowan, Shepperton, England, assignor to United Gas Industries Limited, London, England

Filed July 2, 1971, Ser. No. 159,248
Claims priority, application Great Britain, July 13, 1970, 33,843/70; Oct. 15, 1970, 49,031/70
Int. Cl. G05d 23/12
U.S. Cl. 236—99 8 Claims

A gas valve particularly for use in gas oven control systems comprises an isolating valve and a thermostatically controlled valve arranged in series. A common sleeve carries both the seat of the thermostatically controlled valve and the head of the isolating valve and a manual control moves the sleeve axially from an OFF position in which the isolating valve is closed to a selected position in which the thermostatically controlled valve is set to close when a temperature corresponding to said position is sensed in the oven.

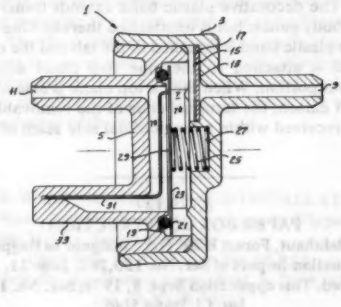


3,729,132

THERMAL CONTROL VALVE

George C. Ludwig, Amityville, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 25, 1971, Ser. No. 109,492
Int. Cl. G05d 23/02
U.S. Cl. 236—101 7 Claims



A valve has a body with inlet and outlet ports and a calibrated orifice for providing restricted flow at least in one direction between the inlet and outlet ports. Valve means provides unrestricted flow in the opposite direction between the inlet and outlet ports and a bi-metal element responsive to temperature operates the valve means at a predetermined temperature to provide unrestricted flow in both directions between the inlet and outlet ports.

3,729,133

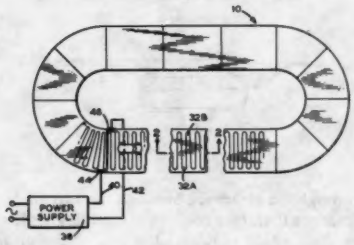
MODEL ROADWAY TRACK

Garry C. Covert, Baroda, Mich., assignor to Heath Company, Benton Harbor, Mich.

Filed July 26, 1971, Ser. No. 166,166
Int. Cl. A63h 18/12
U.S. Cl. 238—10 E 6 Claims

A track assembly includes an interdigitated arrangement of foil conductive strips which are fixedly mounted on one sur-

face of an electrical non-conductive baseplate. On the underside of each section of baseplate is a dovetail connector arrangement which interlocks with a similar dovetail arrangement of an adjacent track section.

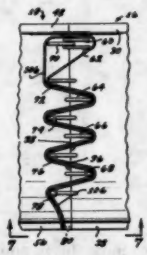


3,729,134

TOY VEHICLE TRACK SYSTEM

John S. Cook, Sunnyvale, and Denis V. Bosley, Palos Verdes Peninsula, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 20, 1971, Ser. No. 107,912
Int. Cl. A63h 19/30
U.S. Cl. 238—10 E 7 Claims



A track system having a banked curve portion comprising three track sections. Connection between the track sections is made by connector flanges and connector tabs integral with one track section extending beyond its end to engage the end of an abutting adjacent track section, so that alignment of track section surfaces is achieved in addition to stiffening and strengthening the track sections. An elastic band is then looped about the connector flanges to insure joinder.

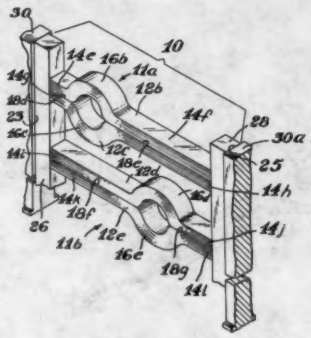
3,729,135

EXPANSION JOINT FOR FLOW SPEED REACTION RAILS

James W. Frasure, Houston, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed March 9, 1972, Ser. No. 233,117
Int. Cl. E01b 11/00
U.S. Cl. 238—151 13 Claims

An expansion joint to connect two rail sections comprising an expansion element with two elongated expandable laminated connectors. The connectors elastically flex upon exertion thereon of generally axially aligned forces. The expansion joint can be enclosed by a suitable cover and side shields and used in mass transport systems.

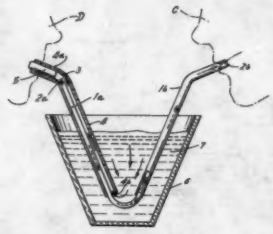


3,729,136

DRINKING STRAW

Sol Friedman, 10 Roland Drive, Monsey, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,129
Int. Cl. A47g 21/18; A61j 15/00
U.S. Cl. 239—33 8 Claims



A drinking straw has opposite open ends and is surrounded in part and with clearance by a tube which extends beyond one of the open ends and an end section of which is closed by a plug which is to be inserted into the mouth of a doll. Thus, when the straw with the open inlet end of the tube is inserted into a body of liquid, and a child exerts suction at the opposite open end of the straw, liquid will first rise in the clearance between the tube and the straw, thereupon enter in the region of the mouth of the doll the straw itself and travel along to the mouth of the child, creating the illusion that the doll is drinking together with the child through the same straw.

3,729,137

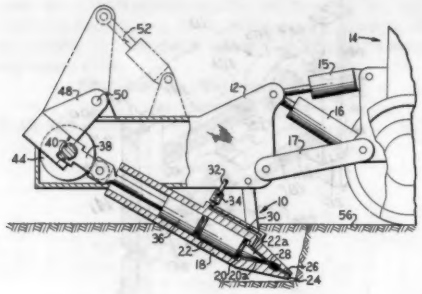
MECHANICALLY ACTUATED WATER CANNON

Delwin E. Cobb, and Robert J. Sullivan, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed April 12, 1971, Ser. No. 133,261
Int. Cl. B05b 1/08
U.S. Cl. 239—101 7 Claims

An apparatus for creating high velocity jets of liquid for fracturing rock and like materials, said apparatus utilizing massive rotary flywheels for storing large amounts of kinetic

energy. The kinetic energy is then delivered by a crank and link mechanism to a piston which forces quantities of liquid



from a chamber through a nozzle at sufficient velocity to fracture selected materials.

3,729,138

ULTRASONIC ATOMIZER FOR ATOMIZING LIQUIDS AND FORMING AN AEROSOL

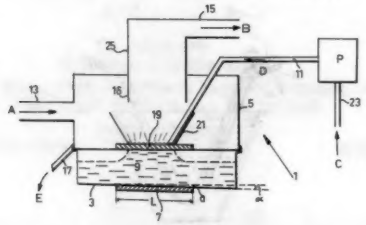
Jan Erik Tysk, Ekero, Sweden, assignor to LKB-Medical AB, Bromma, Sweden

Filed July 21, 1971, Ser. No. 164,567

Claims priority, application Sweden, July 23, 1970, 10183/70

Int. Cl. B05b *3/14, 17/06*

U.S. Cl. 239—102 5 Claims



An ultrasonic atomizer for atomizing liquids and forming an aerosol, comprising a container defining an atomizing chamber having a liquid inlet for the liquid to be atomized and a gas inlet for carrier gas and a gas outlet for discharging the aerosol formed, an ultrasonic vibrator being arranged in connection with said chamber for providing liquid atomization, a transmission chamber being positioned in connection with the ultrasonic vibrator and intended to contain a transmission medium for transferring ultrasonic energy from the ultrasonic vibrator to the vibrating element which is positioned on the opposite side of the transmission chamber.

3,729,139

SEALS

Derek Aubrey Roberts, Almondsbury, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

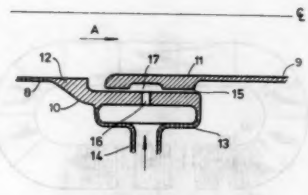
Filed Sept. 17, 1971, Ser. No. 181,398

Claims priority, application Great Britain, Sept. 26, 1970, 45,976/70

Int. Cl. B64d *33/04*

U.S. Cl. 239—127.3 6 Claims

A seal clearance is automatically maintained between the mating ends of two ducts the minor one of which is held at a steady temperature by a hot fluid flowing through it. The clearance between the two ducts is maintained by blowing cooling air through apertures in the outer duct which can then



escape through the clearance between the two ducts. The size of the clearance therefore controls the cooling airflow through the outer duct which regulates the size of the clearance by controlling the thermal expansion of the outer duct.

3,729,140

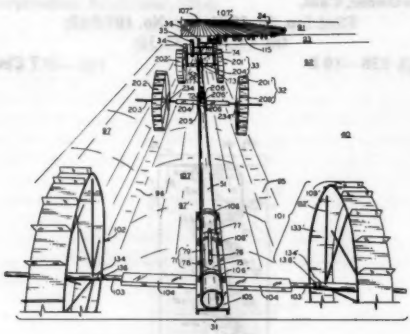
MOBILE IRRIGATION SPRINKLER APPARATUSES AND PROCESSES OF OPERATION THEREOF

Milton H. Wagner, Rt. 1, Brownfield, Tex.

Filed July 19, 1971, Ser. No. 163,742

Int. Cl. A01g *25/02*

U.S. Cl. 239—212 8 Claims



Tow type irrigation apparatuses and processes operating without anchors wherein the moving pipe train is automatically maintained in a straight line along one portion thereof and along another portion parallel thereto and longitudinally and laterally displaced therefrom while a third intermediate portion between is in a stable inverse curve form.

3,729,141

WATER MOTOR WITH PARTIAL CIRCLE PATTERN

Gail Cornelius, Portland, Oreg., assignor to R. M. Wade & Co., Portland, Oreg.

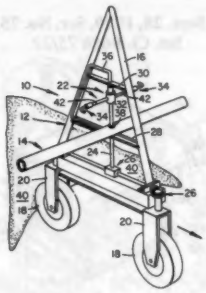
Filed June 16, 1971, Ser. No. 153,518

Int. Cl. A01g *25/02*; B05b *3/06, 3/18*

U.S. Cl. 239—212 7 Claims

An improved water motor for automatic sprinkling systems provides a selected sprinkling pattern which is reversed 180° upon reversal of the direction of water motor rotation. Thus a section of ground immediately in front of each driving motor of the sprinkling system is left dry until the drive means passes. To this end, a rotatable sleeve valve disposed within the water motor defines manifold means which allows water to pass from the water motor nozzles only during selected arcuate portions of rotation thereof. The reversal of the direction of water rotation automatically rotates the sleeve valve 180° to reverse the direction of the sprinkling pattern. Further, the improved water motor may be readily disposed with the output

shaft from the motor extending through the pipeline in selected configuration, to allow preferred location of the



water motor at a selected height above the pipeline and thus at an optimum height above the ground level.

3,729,142

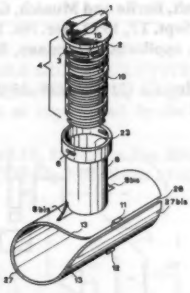
DRIPPERS FOR IRRIGATION

Javier Rangel-Garza, and Jaime Leal-Diaz, both of Escobedo 733 Sur Suite 316, Monterrey, Nuevo Leon, Mexico

Filed Dec. 3, 1970, Ser. No. 94,693

Int. Cl. B05b *1/30*

U.S. Cl. 239—542 **13 Claims**



A dripper for irrigation has a removable male member with a handle and ridges providing a meandering water flow path for controlling pressure drop and is held in a smooth walled female receptacle by tabs for quick removal by twisting the handle. A clamping member accompanying holds the dripper by surrounding supply pipe lines of various sizes with an aperture therethrough to receive a dripper extension by means of a mating lock hook portion engaging the inner walls of the supply pipe line. The dripper male member ridges may be made of plastic to allow ready removal of ridge portions for changing the path and drip rate.

3,729,143

FORAGE HARVESTER CUTTING REEL AND GAUGE PINS FOR POSITIONING THE CUTTING BLADES THEREON

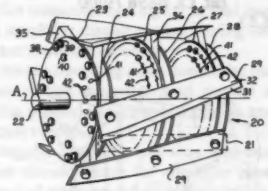
Robert A. Wagstaff, and Thomas W. Waldrop, both of New Holland, Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed April 29, 1971, Ser. No. 138,539

Int. Cl. B02c *18/20*

U.S. Cl. 241—282.2 **12 Claims**

A forage harvester has a cutting reel of three pairs of radially extending supporting plates with each supporting plate having two concentric rows of equally spaced mounting holes for passing bolts to fasten cutting blade mounting blocks between the plates of a given pair. The blocks project beyond the edges of the blades and have contoured end surfaces to seat spirally shaped cutting blades on the blocks. The blades are bolted to the blocks so that these bolts will shear more



readily than the mounting bolts through the plates. The blades are positioned on the mounting blocks by retractable gauge pins exteriorly positioned on the opposite side walls of the forage harvester a radial distance equal to the radial distance from the center of the cutting reel to the shear bar.

3,729,144

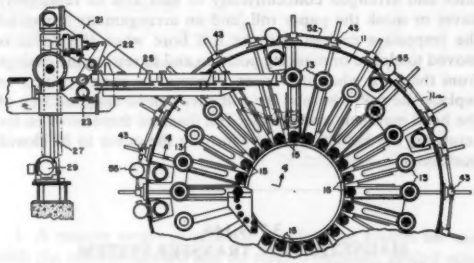
DESIGN OF ROTARY STRIP ACCUMULATOR

Tadeusz M. Bijasiewicz, and Robert A. Somerhalder, both of Pittsburgh, Pa., assignors to Wean United, Inc., Pittsburgh, Pa.

Filed Aug. 5, 1971, Ser. No. 169,192

Int. Cl. B65h *17/48*

U.S. Cl. 242—55 **10 Claims**



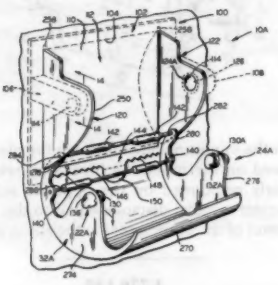
The disclosure relates to a device for accumulating a continuous coil of strip, such as, carbon steel. The device comprises a support upon which the strip material is accumulated by being coiled into two substantially concentric sets of convolutions—an outer set and an inner set—connected by a free reverse loop which orbits between the sets of convolutions. The sets of convolutions are distinguished not only by their relative concentric positions, but by their reversed winding which results in the existence of a numerical balance between the convolutions of the respective sets during periods of strip input and/or output from the device. Accordingly, the rate of change in the number of convolutions in each set is the same; their number increasing as the quantity of the accumulated strip increases and decreasing as the quantity decreases. To accommodate such changes without undesirable collapsing and slippage of the strip, the sets of convolutions are formed against two expansible roller cages which support and guide the strip. The rollers of the cages are provided with interrelated bearing chock assemblies to which are connected mechanical jacks for radially displacing the cages independently. At least some of the rollers of the outer cage are driven by a gear-motor unit directly supportable by the journals of the rollers. The diameters of the rollers of the outer cage are considerably larger than the diameters of the rollers of the inner cage and several of the former are considerably shorter in body length for strip guiding purposes.

3,729,145

PAPER ROLL HOLDING AND DISPENSING DEVICE

Bon Gul Koo, and Bon Hyup Koo, both of 8443 Kean Avenue, Hickory Hills, Ill.

Filed Dec. 29, 1971, Ser. No. 213,340
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.53 **10 Claims**



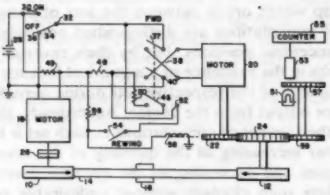
A holder and dispensing device for toilet paper and the like including opposed roll journaling assemblies each including an extending and retracting casing that houses a head member which is spring biased to extended position wherein it projects from the respective casings along the axis of rotation of the roll, an arcuate cover overlying the space between the assemblies and arranged concentrically to said axis to removably cover or mask the paper roll, and an arrangement to extend the respective casings into the roll bore when the cover is moved to closed or masking position and to retract the casings from the bore when the cover is moved to open position to replace the roll, whereby the roll core can be snapped free of the head members and another roll inserted therebetween for returning the holder to use by moving the cover to its closed position.

3,729,146

MAGNETIC TAPE TRANSFER SYSTEM

Robert N. Miller, Dallas, Tex., assignor to International Computer Products, Inc., Addison, Tex.

Filed Nov. 19, 1970, Ser. No. 91,081
Int. Cl. B65h *17/02*
U.S. Cl. 242—67.4 **17 Claims**



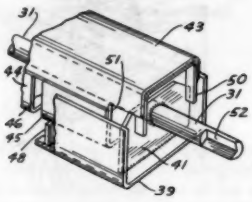
A method and apparatus for driving reels of the tape cassette wherein one motor is connected directly to one reel and supplied with power continuously to drive the reel in a direction to take up tape. A second motor is coupled to a second reel through a speed reducing mechanism providing a mechanical advantage. Both direction of rotation and speed of the second motor are controlled to effect a control transfer of tape between the two reels while the first motor slips.

3,729,147

COLLAPSIBLE SHAFT FOR PAINT SPRAY BOOTH

Sheila Hardy, 400 North Avenue, Dispo Spray Booths, Bartlett, Ill.

Filed Sept. 28, 1970, Ser. No. 75,844
Int. Cl. B65h *75/22*
U.S. Cl. 242—72 **6 Claims**



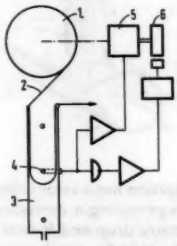
The invention resides in the particular combination and arrangement of elements and especially in the provision of an improved structure having a single, co-extending drive shaft and a single shiftable member to collapse the device, so that it may more easily be removed from a roll of paint laden material.

3,729,148

MAGNETIC TAPE APPARATUS WITH GRADUATED BRAKE AND/OR MOTOR TORQUE FOR CONTROLLING TAPE WINDING

Klaus Winkler, 8033 Planegg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 17, 1971, Ser. No. 181,380
Claims priority, application Germany, Sept. 23, 1970, P 20 46 916.3
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 **4 Claims**



A magnetic tape apparatus where the tape feed is uncoupled from the inert tape coils with the aid of buffer systems, and the speed is controlled as a function of the increase and/or decrease of the tape past at least one gate, wherein passage of a barrier by the tape in one direction provides a highly increased brake torque and passage of the gate or barrier in the other direction provides a highly increased motor torque, either of which torques are markedly decreased after a certain time in synchronism with the operation of the tape control system.

3,729,149

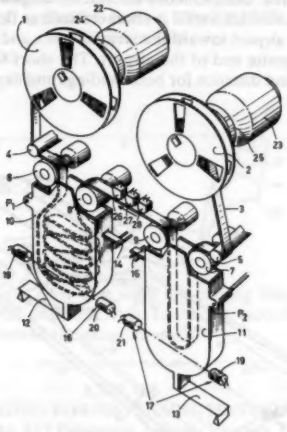
TAPE TRANSPORT

Louis Assuerus van de Wijngaert, Emmasingel, Eindhoven, Netherlands

Filed Feb. 18, 1970, Ser. No. 12,341
Claims priority, application Netherlands, Feb. 24, 1969, 6902878
Int. Cl. G11b *23/12*
U.S. Cl. 242—183 **5 Claims**

A magnetic recording and playback device having a tape-shaped record carrier particularly for use in computer

memory systems having tape-bins and a sensing member for signalling the presence of a tape-loop in said tape-bins. The spool motor on the winding-on side being controlled by the

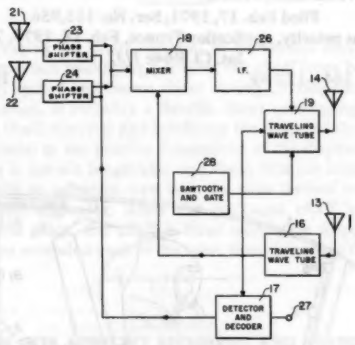


weight of the tape in the associated tape-bin, and the spool motor on the winding-off side being controlled by the presence or absence of the last tape-loop in the associated tape-bin.

3,729,150
MISSILE GUIDANCE SYSTEM

Robert L. Conger, Riverside, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 19, 1961, Ser. No. 104,771
Int. Cl. F41g 7/00; F42b 15/02
U.S. Cl. 244—3.13 **2 Claims**



1. In a system for guiding a missile to a distant target the combination comprising:

a. means located at the missile launching station for transmitting command guidance signals to said missile and for illuminating the target with a radar signal,

b. receiving antenna means located on the rear portion of said missile for receiving said command guidance signals directly from said missile launching station,

c. scan antenna means located on the forward portion of said missile for receiving echos of said radar beam from said target,

d. first amplifier circuit means having an input coupled to said receiving antenna means for amplifying said command signals and having an output,

e. detector and decoder means having an input coupled to the output of said first amplifier circuit means for supplying command signals to the flight control system of said missile,

f. transmitting antenna means located on the rear of said missile for transmitting a signal to said launching station,

g. second amplifier circuit means having an output coupled to said transmitting antenna,

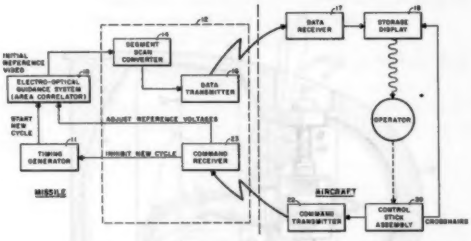
h. circuit means coupling a portion of the output of said first amplifier circuit means to said second amplifier circuit means for supplying a carrier signal to said second amplifier circuit means,

i. circuit means coupling said scan antenna to said second amplifier circuit means for amplifier modulating the carrier signal of said second amplifier circuit means whereby the command signals transmitted to said missile modified in accordance with target position information transmitted from said missile.

3,729,151
REMOTE TARGET ACQUISITION AND LOCK-ON SYSTEM

Klaus J. Hecker, Oberursel, Germany, assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 24, 1965, Ser. No. 510,165
Int. Cl. F42b 15/02
U.S. Cl. 244—3.14 **2 Claims**



1. A remote target acquisition and lock-on system for use with the control aircraft and an electro-optically guided missile which is launched prior to target acquisition, comprising:

a. an area correlation type electro-optical television seeker means located in a guided missile and including a storage tube means, optical-axis axis torquing means and crosshair generator means,

b. a timing generator means also located in the missile for automatically causing said seeker means to store a new image in its storage tube at regular fixed intervals.

c. a data link means located in the missile and consisting of a segment scan converter means, data transmitting means and command receiving means,

d. a data receiver means, a storage display means, a control stick assembly, and command transmitter means all located in a control aircraft,

e. said seeker means feeding an initial high-frame-rate video reference signal of the image of a scene to the segment scan converter means of said data link means,

f. said segment scan converter means converting the high-frame-rate video signal to a low-frame-rate signal,

g. said data transmitting means in the missile transmitting said low-frame-rate signal from the scan converter to said data receiver means in the control aircraft,

h. the signal received by the data receiver means being displayed on said storage display means in the aircraft for visually determining whether the desired target appears in the displayed image,

i. said control stick assembly being manually operable to generate commands which are fed to the command transmitting means in the aircraft and transmitted to the com-

mand receiving means in the missile for causing the optical axis of said seeker means to be torqued to look at another scene at each interval until the desired target is displayed on said display means in the aircraft,

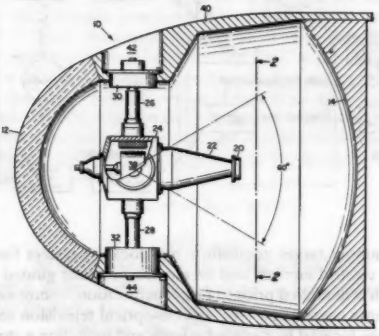
j. manually operable means in said control stick assembly operable to cause command signals to be transmitted at such time as a target image appears on said dispiay for inhibiting said timing generator means from automatically re-cycling the storage tube of said seeker means at said regular fixed intervals and for generating tracking-mode cross-hairs on said aircraft, display means, said control stick assembly also including means operable to adjust said cross-hairs to fix on the target image and for producing a signal representing the position of said cross-hairs which is transmitted to the missile causing adjustment of reference voltages in said seeker means to correspond to the cross-hair position, whereby the missile seeker means is locked-on the target for tracking same.

3,729,152

INERTIALLY STABILIZED OPTICAL SYSTEM FOR MISSILES

Andrew N. Stephenson, 2151 Almanor St., Oxnard, Calif.

Filed July 28, 1970, Ser. No. 64,155
Int. Cl. G06f *15/50*; F42b *15/02*
U.S. Cl. 244—3.16 **4 Claims**



An optical "seeker" system for a guided missile, the system being so designed that a minimum amount of structure is required to be stabilized. Whereas certain known arrangements necessitate mounting the mirror and lens of the optical assembly on a stabilized gimbal while the detector is fixed in place, the present concept reverses this approach and mounts only the detector on the gimbal while the mirror and lens are secured to the missile body. This simplifies overall design and yields a system which is not only more rugged but permits the use of larger optical components with a greater energy-collecting capacity.

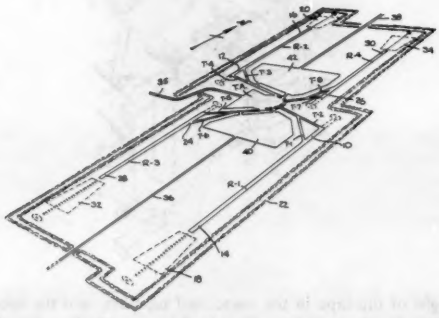
3,729,153

HIGH CAPACITY LOW POLLUTANT AIRPORT DESIGN

Harold A. Wilde, 6640 S. W. 129th Terrace, Miami, Fla.

Filed Feb. 26, 1971, Ser. No. 119,210
Int. Cl. B64f *1/00*
U.S. Cl. 244—114 R **9 Claims**

The airport construction includes a terminal area and a pair of generally parallel runways on opposite sides of the terminal area. Each of the runways has an end more proximate to the terminal area than its opposite end with the opposite ends extending in opposite directions from the proximate ends. Short or stub taxiways connect the proximate runway ends to the terminal area. Simultaneous aircraft landings and takeoffs are provided. Aircraft traffic is characterized as flowing from one end of the airport toward the terminal area and from the latter to the opposite end of the airport. The short taxiways reduce taxi time and distance for both landings and departures and, in conjunction with the flow through aircraft traffic pattern, minimize air and noise pollution.

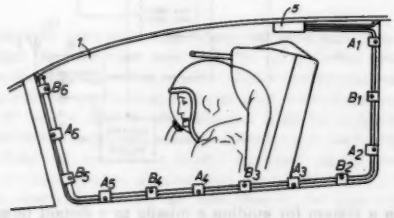


3,729,154

METHOD AND DEVICE RELATED TO THE EJECTION OF A PERSON FROM AN AIRCRAFT COCKPIT OR THE LIKE

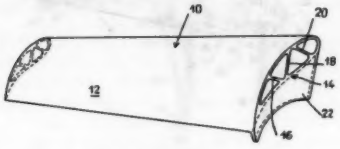
Henri Deplante, Paris, France, assignor to Avions Marcel Dassault, Vaucresson, France

Filed Feb. 17, 1971, Ser. No. 115,956
Claims priority, application France, Feb. 18, 1970, 7005804
Int. Cl. B64c *1/32*
U.S. Cl. 244—122 AF **10 Claims**



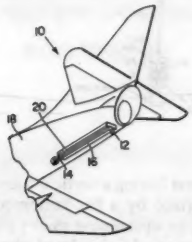
A method and device related to the ejection of a person from an aircraft cockpit or the like, wherein two sets of detonating charges in appropriate spaced relationship act on the confining wall, the first set to cause the commencement of ruptures and the second set, which are fired subsequently, to cause completion of the previously commenced ruptures, thereby to permit ejection of the person through the shattered and fragile wall, while the latter is nevertheless still intact, without danger.

3,729,155
MOULDED WING FLAP
Roger Huet, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France
Filed Dec. 14, 1970, Ser. No. 97,533
Claims priority, application France, Dec. 22, 1969, 6944535
Int. Cl. B64c 3/24
U.S. Cl. 244—123 3 Claims



A moulded light alloy cast wing flap having thin external walls and internal partition walls forming a monolithic cast structure to withstand shrinkage stresses.

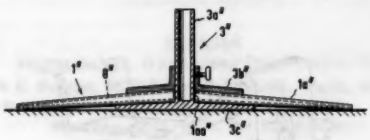
3,729,156
PACKAGING FOR DISPENSING MATERIAL
Robert L. Wright, 127 Palomares Avenue, Ventura, Calif.
Filed Sept. 18, 1968, Ser. No. 761,900
Int. Cl. B64d 1/02; H01q 15/00
U.S. Cl. 244—136 1 Claim



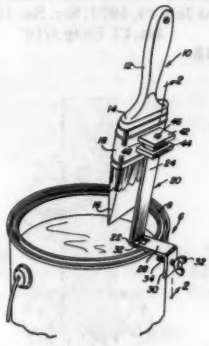
A packaging for chaff material to be loaded into a chaff dispenser which packaging prevents the chaff from being accidentally spilled and blown about during the dispenser loading operation. It includes a flexible sheet enveloping the assembled chaff material and confining the shape of the assembled material to the interior dimensions of the dispenser. The envelope is pre-slit lengthwise and these slits are temporarily sealed with an adhesive tape with the ends thereof extending beyond the dispenser. After the packaged chaff has been loaded into place, the chaff is freed within the dispenser by pulling the extended ends of the tape, thus reopening the slits.

3,729,157
COLLAR FOR UPRIGHT MEMBERS AND STAND WITH SUCH COLLAR
Peter Robert Haff, Munich-Geiselgasteig, Germany, assignor to Mosel-Anstalt, Vaduz Liechtenstein
Filed June 1, 1971, Ser. No. 148,705
Claims priority, application Germany, June 2, 1970, P 20 27 072.8
Int. Cl. A47g 33/12
U.S. Cl. 248—44 14 Claims

The present invention relates to a collar for upright members such as candles or Christmas trees, which is made of a pleated piece of sheet material, for example fabric, paper, metal foil, or synthetic material. The pleated piece of sheet material is folded so that one of its lateral edges forms a central opening for receiving the upright member while its other lateral edge forms a peripheral boundary of the folded collar. The end portions of the piece of sheet material are provided with releasable connecting means and the pleats or at least some of the pleats are provided with stiffening or reinforcing means such as ribs of cardboard. A stand comprising such a collar also has upper and lower stand members whith a spacing therebetween in which the collar is received whereby the stand members extend radially outwardly from said central opening.



3,729,158
PAINT CAN BRUSH HOLDER
David Nagy, 1252 Davenport Road, Toronto, Ontario, Canada
Filed June 14, 1971, Ser. No. 152,685
Int. Cl. B44d 3/14
U.S. Cl. 248—110 4 Claims

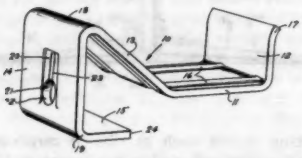


A paint brush elevating, positioning and holding device for use atop a paint can. It is preferably but not necessarily made from a length of flat-faced strap metal whose lower end is L-shaped and fashioned into a readily applicable bracket or clamp. The upper end is reduced to provide a tang and a shoulder and is equipped with upper and lower plates or cleats having a permanent magnet sandwiched therebetween and adapted to attract and hold the usual magnetizable metal band of the paint brush in a ready-to-use position.

3,729,159
WALL FORMING BRACKET
Robert C. Foster, 403 Laurel St., Elk Grove Village, Ill.
Filed Nov. 2, 1971, Ser. No. 194,820
Int. Cl. E04g 17/02
U.S. Cl. 248—205 R 7 Claims

A wall-forming bracket or clamp, also known as a waler bracket, for concrete wall forms of the type using plywood wall-forming sheets, tie rods with headed ends projecting through holes in the sheets, vertical lumber studs overlying the sheets and horizontal lumber walers overlying the studs. The bracket is a one-piece rigid metal member having a flat base on which the waler rests, an upturned outer end flange for overlying the outer edge of the waler, an upturned inclined leg on the opposite end of the base having a keyhole slotted

downturned end flange for receiving the headed end of a tie rod and overlying the outer surface of the plywood sheet, and an outturned foot on the bottom of the downturned flange adapted to be struck by a hammer to remove the bracket from the wall form after use. The slotted downturned flange presents a large surface area to the plywood sheet which will



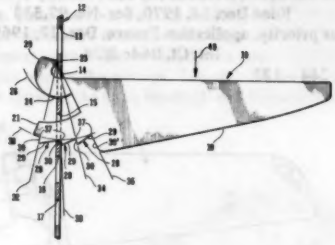
not dimple the plywood under a heavy load and the face of the downturned flange receiving the head of the tie rod is inclined to cam the bracket against the plywood sheet causing it to project straight outwardly therefrom. The top and bottom ends of the downturned flange are rounded and any bending deformation of the bracket is in a direction that will not permit these rounded ends to damage the plywood.

3,729,160
TREE SEAT
Eugene A. D'Imperio, 15 Allen Place, Harrison, N.Y.
Filed July 19, 1971, Ser. No. 163,804
Int. Cl. E04g *3/10*
U.S. Cl. 248—218 **12 Claims**

A self-supporting, easily portable tree seat is disclosed as including a seat member, a seat frame underlying the seat member and means for attaching the frame to the seat member such that the frame is rotatable relative thereto. Also attached to the seat member is a seat brace rotatably attached to the seat frame such that the brace is capable of assuming a position bearing against an object, such as a tree, to which the seat is attachable. A support rod underlies the seat member and includes an upstanding arm generally parallel to the brace and a threaded arm projecting through the base for threadable insertion to the tree. The support rod acts as a cantilever support for the seat, thus avoiding the necessity for chains and the like common in the prior art for supporting tree seats.

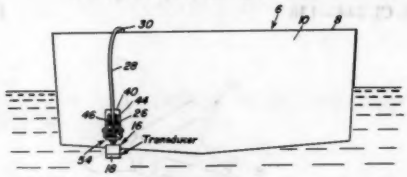
3,729,161
ADJUSTABLE SHELF BRACKET
Earl Christensen, Albert Lea, Minn., assignor to Streater Industries Inc., Albert Lea, Minn.
Filed Sept. 30, 1970, Ser. No. 76,661
Int. Cl. A47g *29/02*
U.S. Cl. 248—242 **2 Claims**

A one piece adjustable shelf bracket having two hooks or lugs which hook into slots in a vertical post. The bracket is angularly adjustable in a vertical plane and the hooks are designed to vectorize loads applied to the shelf so that forces are applied from the hooks to the slotted post in three or four



different places. This provides tor an even and efficient distribution of the shelf load.

3,729,162
TRANSOM TRANSDUCER MOUNTING BRACKET
Frank J. Salvato, 6605 Lange Circle, Dallas, Tex.
Filed March 5, 1971, Ser. No. 121,364
Int. Cl. H04r *1/44*; A47f *5/10*
U.S. Cl. 248—291 **5 Claims**



For use on a boat having a vertical transom, a transducer assembly characterized by a flat-bottomed underwater block-like head having an upstanding sleeve providing a sheath for the lower end portion of an insulated wire which is operatively connected with said head, and novel means for mounting said transducer. The mounting means comprises a transom-supported adapter cleat and a bracket. The cleat is joined to the transom by fastening screws. The complemental bracket is L-shaped in edge elevation. The short vertical leg of the bracket is normally flush and united with the lower end of the cleat through the medium of a spring hinge. The long horizontal leg has an elongated slot in which the sleeve is insertably adjustably and retentively mounted. The sleeve-supported transducer is capable of swinging up and out of the way clear of damaging obstructions.

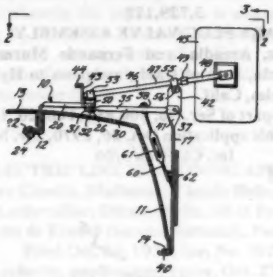
ERRATUM

For Class 248—487 see:
Patent No. 3,729,109

3,729,163
REAR-VIEW AUTOMOTIVE MIRROR
Wayne Cummins, 515 A Blackwood Avenue, Franklinville, N.J.
Filed Dec. 20, 1971, Ser. No. 209,686
Int. Cl. B60r *1/06*
U.S. Cl. 248—487 **5 Claims**

An automotive rear-view mirror for attachment to a fender wherein an upper framework is attached to an inner fender edge for extension laterally outwardly over the fender, a depending frame member extends between the upper framework and the lower fender edge, and a mirror is carried on one end of an arm, the other end being connected to an intermediate

region of the upper framework for swinging movement of the arm between an outer operative position and an inner inoperative position, and upstanding struts on the upper framework for selectively supporting the arm in respective positions of the latter.



3,729,164

DEVICE FOR FORMING CONTINUOUS WALLS, BY MEANS OF CONSECUTIVE, REINFORCED-CONCRETE PANELS

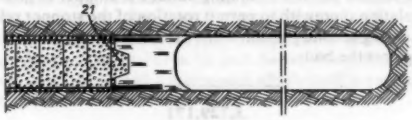
Michel Armand Rene Alfred Baar, Liege, Belgium, assignor to Compagnie Internationale des Pieux Armes Frankignoul, Societe Anonyme, Liege, Belgium

Filed Dec. 2, 1970, Ser. No. 94,371

Claims priority, application Luxembourg, Dec. 16, 1969, 60021

Int. Cl. E02d *5/20*

U.S. Cl. 249—10 **2 Claims**



A device for forming a continuous reinforced concrete wall in which the reinforcement overlaps between adjacent sections of the wall to provide continuity of sheer strength in the wall. The method utilizes a mould end of the invention, which is shaped to protect projecting ends of reinforcement bars during casting of a concrete panel forming the wall. The next cast panel is then cast around the projecting free ends of the reinforcement bars of the previous panel.

3,729,165

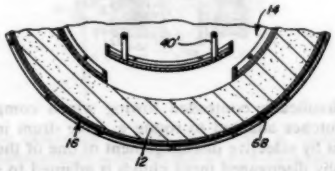
FORM FOR MANHOLES AND THE LIKE

Carroll O. Trimble, Springdale, Ark., assignor to James D. Cypert, Springdale, Ark., a part interest

Filed June 16, 1971, Ser. No. 153,770

Int. Cl. B22c *9/24*

U.S. Cl. 249—144 **3 Claims**



A steel sectional form including inner and outer shells, each formed of components which can be readily assembled for reception of a concrete pour and subsequently disassembled for reuse. The inner shell, which is to be removed through the formed manhole, incorporates key panels for facilitating its disassembly and step gates for enabling the mounting of internal steps as desired subsequent to an initial setting of the concrete.

3,729,166

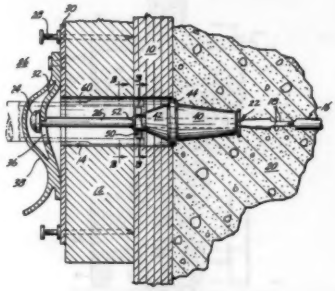
FORM PANEL WITH SNAPABLE FORM-TIE

Frank E. Buyken, 8620 Island Dr., Seattle, Wash., and Robert C. Foster, 403 Laurel St., Elk Grove Village, Ill.

Filed March 18, 1971, Ser. No. 125,483

Int. Cl. E04g *17/08*

U.S. Cl. 249—190 **4 Claims**



A concrete-form tie is disclosed to include a flat sided member seized thereto close to the usual breakback and adapted to be engaged by a socket whereby torque is applied to "snap" the breakback in aid of removing the outer end of the rod in place in hardened cast concrete.

3,729,167

FLUSHING UNIT

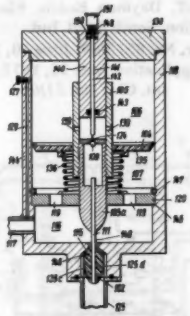
Tore Gulich, Marie Dalsvagen 48D, Malmo, Sweden

Filed March 8, 1971, Ser. No. 121,965

Claims priority, application Germany, March 7, 1970, P 20 10 794.2

Int. Cl. F16k *31/383*

U.S. Cl. 251—39 **11 Claims**



A flushing system, especially for toilet installations, with a valve body normally pressed against a valve seat by fluid under pressure, and with a cylinder-piston system, the cylinder chamber of which, is adapted to receive fluid under pressure, in which conduit means adapted to convey fluid under pressure to said cylinder chamber extends coaxially with regard to the cylinder axis through said valve body and through a piston

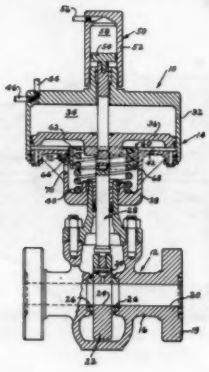
rod connected to the piston of said cylinder piston system, while an auxiliary valve interposed in said conduit means is operable from a point outside the housing containing the flushing system.

3,729,168

PISTON STOP FOR PISTON OPERATED VALVE

Paul J. Natho, Houston, and Felix J. Vicari, Longview, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 13, 1971, Ser. No. 171,606
Int. Cl. F16k *31/143*; F15b *15/24*
U.S. Cl. 251—60 3 Claims



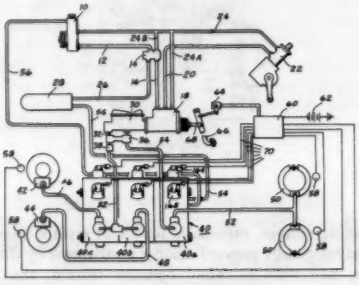
A gate valve structure has a stem extending outwardly of the valve housing and a valve operator for actuating the gate valve. The valve operator includes a fluid cylinder and a piston secured to the stem and mounted within the cylinder for reciprocable movement between open and closed positions of the gate valve. A generally cylindrical piston stop has external screw threads mating with internal screw threads on the cylinder and is accessible from a position outside the cylinder so that the piston stop may be adjusted without any disassembly of parts.

3,729,169

ADAPTIVE BRAKING SYSTEM WITH HYDRAULICALLY POWERED MODULATOR

Stanley I. MacDuff, Daytona Beach, Fla., assignor to The Bendix Corporation, South Bend, Ind.

Division of Ser. No. 831,949, June 10, 1969, Pat. No. 3,610,702. This application June 25, 1971, Ser. No. 156,648
Int. Cl. F16k *31/06*
U.S. Cl. 251—129 6 Claims



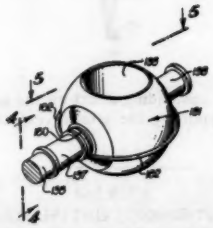
An adaptive braking system for a motor vehicle including a hydraulically actuated brake pressure modulator operatively controlled by solenoid valve means being responsive to wheel deceleration sensing means via computer means.

3,729,170

ROTARY PLUG VALVE ASSEMBLY

George E. Lewis, Arcadia, and Fernando Murman, Palos Verdes Peninsula, both of Calif., assignors to Hydril Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 800,850, Feb. 20, 1969, Pat. No. 3,589,667. This application Oct. 26, 1970, Ser. No. 83,948
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 9 Claims



The disclosure concerns the provision, in a valve assembly having a body, of:

a. a rotary plug stopper having an opening extending therethrough and defining a first axis;

b. trunnion means mounting said stopper for rotation within the body about a second axis to carry said opening into and out of flow passing positions;

c. an annulus extending about said trunnion means, and

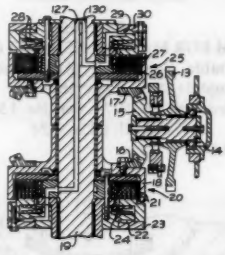
d. seal ring structure having a first portion extending closely about the annulus to seal off between the annulus and body and a second portion extending about the stopper in non-sealing relation therewith to permit rotation of the stopper relative to said ring second portion while said ring second portion seals off against the body.

3,729,171

REVERSIBLE TOWING WINCH AND METHOD FOR OPERATING SAME

Lyle F. Yates, Metamora; Hugh C. Morris, Peoria, and James L. Schmitt, Washington, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 9, 1971, Ser. No. 151,367
Int. Cl. F16d *67/02*
U.S. Cl. 192—12 A 24 Claims



A hydraulically controlled towing winch comprises two winch clutches adapted to rotate a cable drum in opposite directions by selective disengagement of one of the clutches. A normally disengaged input clutch is adapted to selectively couple a power input shaft to a bevel gear arrangement of the winch mechanism for operation thereof. A single lever control system may be utilized to selectively control the actuation of

the input and winch clutches to place the winch in the following modes of operation: "Reel-out" wherein the input clutch is engaged and only one of the winch clutches is disengaged to pay-out the cable by rotating the drum in a first direction; "Reel-in" wherein the input clutch is engaged and only the other one of the winch clutches is disengaged to rotate the cable drum in an opposite direction; and "Free-spool" wherein both of the winch clutches are disengaged to permit the drum to rotate freely.

3,729,172

ELECTRIC LINE TENSIONING APPARATUS

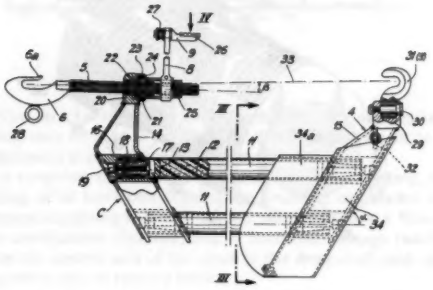
Jean Pierre Casalta, Mulhouse; Claude Dubs, Riedisheim, and Andre Lechevallier, Ottmarsheim, all of France, assignors to Electricite de France (Service National), Paris, France

Filed Oct. 26, 1971, Ser. No. 192,066

Claims priority, application France, Oct. 27, 1970, 7038701

Int. Cl. H02g 1/04; B25b 25/00

U.S. Cl. 254—67 **10 Claims**



A tensioning apparatus for aerial electric lines which allows the replacement of a defective anchorage insulator without interrupting the electricity supply comprises a generally C-shaped frame connectable at its ends between a pylon or like support and the line and a screw-jack which itself is connected to a clamp on the line.

3,729,173

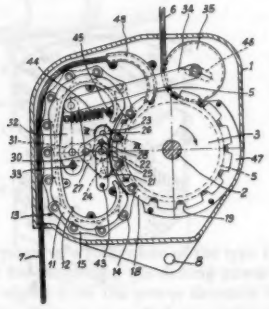
ENDLESS JAW CHAIN SELF-CLAMPING WINCH

Raymond Levardon, Paris, France, assignor to Tractel S.A., Paris, France

Filed Jan. 24, 1972, Ser. No. 220,271

Int. Cl. B66d 1/16

U.S. Cl. 254—175.5 **5 Claims**



The rope extending through the device is clamped in a groove of substantially semi-circular or part-circular cross sectional contour, formed in the outer periphery of a pulley, along a predetermined arc of this pulley, by clamping jaws of curved longitudinal configuration and part-circular cross-sectional contour, said clamping jaws being adapted to move along with the rope during the travel thereof through the device, said clamping jaws being carried by an endless chain meshing with at least one circular set of teeth rigid with said pulley, suitable means being provided for automatically exerting against the rope-engaging jaws a clamping force varying as a function of the tension of the taut run of said rope.

3,729,174

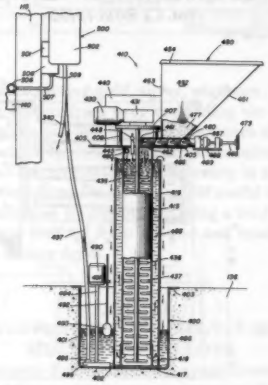
APPARATUS FOR PREPARING WASH SOLUTION

Erwin B. Bahnsen, Hinsdale, Ill., assignor to Steiner American Corporation, Salt Lake City, Utah

Division of Ser. No. 879,764, Nov. 25, 1969, Pat. No. 3,698,214. This application Sept. 28, 1971, Ser. No. 184,523

Int. Cl. B01f 7/20, 15/04

U.S. Cl. 259—7 **4 Claims**



Method and apparatus for loosening soil from a mass of pervious cloth in which wash solution is applied to the rolls in the form of a plurality of reciprocable cascades to maintain the surfaces of the pervious cloth wet for a time sufficient to saturate the same; wash solution is prepared and excess wash solution is continually drained from the mass of tightly-wound rolls.

3,729,175

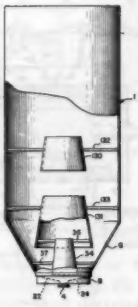
BLENDING APPARATUS

David M. Matweecha, Bethlehem, Pa., assignor to Fuller Company, Catasaugua, Pa.

Filed March 12, 1971, Ser. No. 123,520

Int. Cl. B01f 13/02

U.S. Cl. 259—4 **13 Claims**



A blending apparatus for particulate material which includes a vessel having a conical portion at its lower end. A gas

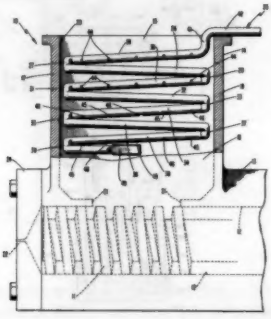
permeable divider means is mounted in the conical portion of the vessel dividing the vessel into a material chamber and a plenum chamber. A second plenum chamber is defined in the bottom of the vessel and has a gas permeable wall facing the inside of the vessel. At least a pair of coaxially aligned blending columns are mounted within the blending silo. One of the columns may be smaller in diameter than the other column and positioned below and extend into the bottom of the other column. The larger column may be divided into a pair of columns which are separated from each other so that less than a full batch of material may be blended.

3,729,176

APPARATUS FOR AIDING THE FLOW OF PARTICULATE MATERIALS THROUGH A HOPPER

Hanan Reich, Lakewood, and Seymour Wolf, Saddle Brook, both of N.J., assignors to Nabisco, Inc., New York, N.Y.

Filed April 26, 1971, Ser. No. 137,452
Int. Cl. B01f *15/02*
U.S. Cl. 259—4 **3 Claims**



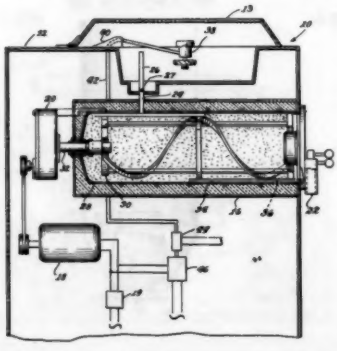
Apparatus for fluidizing particulate materials flowing through a hopper comprising a helical like tubular manifold for low pressure air shaped to conform to the inner walls of the hopper and having air nozzles throughout its length which are directed horizontally in the upper turns of the manifold and downwardly in the lower turns.

3,729,177

IN-PLACE CLEANING SYSTEM

Richard Martin Keyes, Rockford, and William Christian Herramann, Rockton, both of Ill., assignors to Beatrice Foods Company, Chicago, Ill.

Filed Feb. 18, 1972, Ser. No. 227,360
Int. Cl. B01f *7/08*
U.S. Cl. 259—10 **7 Claims**



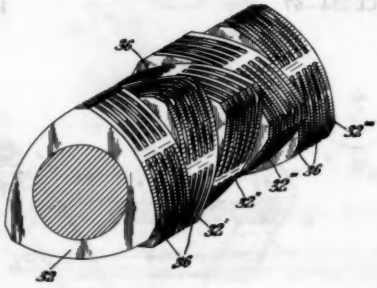
An in-place cleaning and sanitizing system for a frozen confection machine. A wash head is extended over the storage hopper of the machine and liquid and a cleansing agent are introduced into the wash head. A cleaning solution is dispensed from the wash head into the storage hopper, and then into the freeze chamber of the machine, where it cleans and sanitizes the hopper, freeze chamber and all surfaces coming into contact with the frozen confection material.

3,729,178

KNEADING ELEMENTS FOR EXTRUDERS

Kurt H. Stade, Piscataway, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 14,543, Feb. 26, 1970, abandoned.
This application Nov. 19, 1971, Ser. No. 200,420
Int. Cl. B01f *7/00*
U.S. Cl. 259—192 **5 Claims**



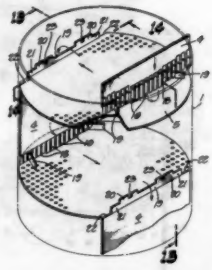
Screw extruder apparatus is provided for the fluxing and mixing of particulate thermoplastic material which comprises providing, in the kneading elements of the screw-mounted kneading section, a plurality of intermittent, substantially radial grooves each having a width smaller than the smallest dimension of the particulate thermoplastic material to be fluxed and mixed.

3,729,179

APPARATUS FOR LIQUID AND VAPOR OR GAS MASS TRANSFER

George J. Keller, Arcadia, Calif., assignor to Fractionation Research, Inc., Bartlesville, Okla.

Filed Sept. 23, 1970, Ser. No. 74,771
Int. Cl. B01f *3/04*
U.S. Cl. 261—114 R **5 Claims**



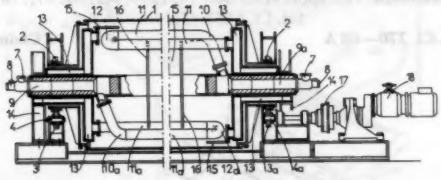
This invention relates to apparatus for liquid and vapor or gas mass transfer on trays and to trays wherein the flow of liquid across the tray from the inlet to the outlet is substantially plug flow.

3,729,180

HEATED REVOLVING DRUM

Jean Bourrel, Montreuill; Maurice Remond, Lescar; Noel Potie, Gelos, and Guy Lagacherie, Grenoble, all of France, assignors to Societe Nationale Des Gas Du Sud-Quest, Pau and Compagnie Des Fours Industriels, Montreuil, France

Filed Feb. 2, 1971, Ser. No. 111,886
Claims priority, application France, Feb. 3, 1970, 7003703
Int. Cl. F27b 7/00
U.S. Cl. 263—6 C 8 Claims



The invention concerns an industrial drying appliance which may be used in the paper or textile industries, or to dry substances in suspension, such as muds.

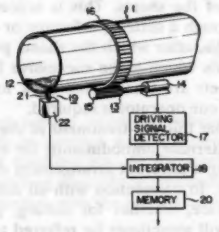
A revolving drum contains internal means of heating, consisting of at least one combustion chamber connected with sources supplying fuel and oxygen, and producing a flame in the combustion chamber, and at least one passage reaching from the central axis of the drum to the drum-wall, and opening into a pipe to remove fumes.

3,729,181

CONTROL SYSTEM OF ROTARY KILNS

Tsutomu Itoh, Shibuya-ku, Tokyo; Koji Suga, Chiba-shi; Yasuo Takumi, Tokyo, and Masahiro Yamamoto, Chiba-shi, Chiba-ken, all of Japan, assignors to Onoda Cement Co., Ltd., Onoda-shi, Yamaguchi-ken, Japan

Filed Dec. 28, 1970, Ser. No. 102,027
Int. Cl. F27b 7/20
U.S. Cl. 263—32 R 7 Claims



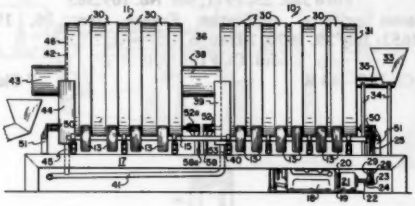
In a control system of a rotary kiln of the type comprising a power detector for measuring the driving power of the kiln and the output signal from the power detector is utilized to control the kiln, there is provided a synchronizing signal generator for generating one synchronizing signal during one revolution of the kiln, an integrator responsive to the synchronizing signal for integrating the output signal from the power detector for an interval corresponding to one revolution of the kiln, and a memory for storing the output signal from the integrator for use it for the control of the kiln.

3,729,182

PROCESS AND APPARATUS FOR RECOVERING PRECIOUS METALS

Jack R. Schafer, Wickensburg, Ariz., and Denton C. Linton, Salt Lake City, Utah, assignors to Desert West, Inc., Salt Lake City, Utah

Filed Nov. 19, 1970, Ser. No. 91,082
Int. Cl. C22b 11/12
U.S. Cl. 266—9 6 Claims



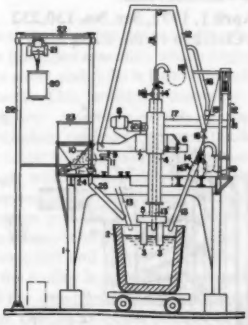
A process of extracting gold, silver, platinum, mercury and other precious metals from ores containing the metals using mercury amalgams but without mercury losses due to flowering, galvanic action, oxidation, etc. Ores containing the metals to be recovered are contacted with mercury in an electrically isolated condition. A preferred apparatus useful in performing the process includes a mixing drum having a feed system and a discharge system isolated from ground and insulating wheels for driving the mixing drum.

3,729,183

APPARATUS FOR REFINING MOLTEN IRON AND MOLTEN IRON ALLOYS

Ryo Ando; Tsutomu Fukushima; Masayoshi Bando, and Akira Honda, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 818,283, April 22, 1969, Pat. No. 3,664,827. This application Feb. 26, 1971, Ser. No. 119,221
Claims priority, application Great Britain, April 22, 1969, 20,416/69; Germany, April 24, 1969, P 19 20 958.6; France, April 24, 1969, 6912993; Canada, April 23, 1969, 49,493; Australia, April 24, 1969, 54013/69; U.S.S.R., April 24, 1969, 1324512; April 24, 1969, 208320; Netherlands, April 23, 1969, 6906228
Int. Cl. C21c 7/00
U.S. Cl. 266—34 A 6 Claims



A ladle containing molten iron or molten iron alloys is located beneath a supporting frame, the supporting frame including a movable stirring shaft carrying at least one stirring rod at the lower end thereof, the stirring rod being adapted to extend only into the upper layer portion of the molten iron in the ladle. At least one oxygen blowing lance is connected to the supporting frame and means for supplying a predeter-

mined quantity of reactant into the ladle is provided. The stirring shaft is moved relative to the frame, and preferably, in a swinging manner whereby at least a point on the stirring shaft axis moves along a substantially circular path.

3,729,184
SUSPENSION STRUT

Fernand Michel Allinquant, and Jacques Gabriel Allinquant, both of 53 Avenue le Notre, Sceaux, France

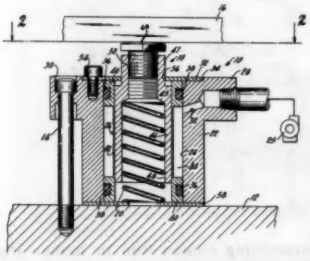
Filed Jan. 25, 1971, Ser. No. 109,363
Claims priority, application France, Jan. 26, 1970, 7002652; July 29, 1970, 7028056
Int. Cl. F16f *5/00*
U.S. Cl. 267—64 R **7 Claims**

An oleopneumatic suspension strut provided with self-pumping means for automatic level-adjustment wherein said level adjustment is performed by means of a carrier piston incorporating a flap valve adapted to pump liquid out of a container into a suspension chamber through at least one port adapted to be uncovered by the piston and opening into a recess and through a system of gauged flap valves providing a passageway for the flow of liquid out of said recess into a tank storing liquid under pressure and out of the latter back into the container while the damping is ensured by a perforated partition separating the suspension chamber from pneumatic cushioning means.

3,729,185
HYDRAULIC WORK SUPPORT

Eugene A. Roeske, Clarendon Hills, Ill., assignor to Owatonna Tool Company, Owatonna, Minn.

Filed April 1, 1971, Ser. No. 130,232
Int. Cl. G25b *11/00*; B23q *3/10*
U.S. Cl. 269—20 **6 Claims**

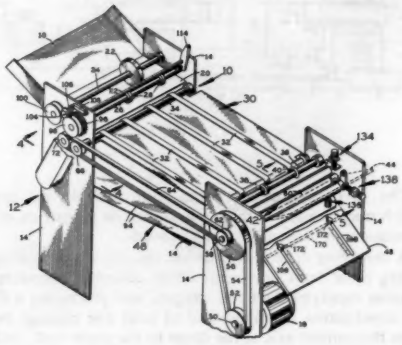


A hydraulically locked work support including a housing having a bore, a sleeve mounted in said bore, a seal at each end of the sleeve in sealing engagement with the bore to define a chamber between the sleeve and the housing, a work support assembly mounted for reciprocal motion in said sleeve and having an outer diameter substantially equal to the inner diameter of said sleeve, a spring biasing said assembly into engagement with a work piece, and a source of hydraulic fluid for pressurizing said chamber to hydraulically lock the assembly in a fixed position within said sleeve.

3,729,186
METHOD AND APPARATUS FOR FOLDING PAPER

Thomas F. Macke, 525 S. E. 26th Avenue, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 814,704, April 9, 1969, abandoned. This application Dec. 14, 1970, Ser. No. 97,776
Int. Cl. B65h *45/14*
U.S. Cl. 270—68 A **2 Claims**



A method of and apparatus for folding paper wherein sheets of paper are folded by a plurality of rolls including three horizontal rolls which are stacked vertically with respect to each other and a fourth roll directly laterally adjacent the middle roll of the stack. The middle roll os driven and in turn rotates the other rolls which idle. With this arrangement of rolls, a sheet may be folded in different ways, and sheets can be handled efficiently and rapidly. The middle roll preferably is in a fixed position, and the other rolls are preferably adjustable, thus facilitating independent adjustment of the latter rolls relative to the middle roll. A feed system for transporting sheets to and from the rolls is disclosed, which system includes a simple clutch device.

In accordance with the method and apparatus of the invention, the sheets are slit, perforated or creased in a preliminary step prior to folding of the sheets. This is accomplished by feeding the sheets through a slitter, perforator or creaser before they enter the rolls, after which the sheets pass through successive pairs of rolls which make successive folds in the sheet. The folded sheets are transported back to the initial feed point so that only one operator is required.

It has been found that this pre-treatment of the sheets can be accomplished in alternate embodiments; for example, an embodiment employing a different arrangement of rolls than that referred to above. In connection with all embodiments, the pre-treatment device, whether for slitting, perforating, creasing or the like, will sometimes be referred to herein as line scoring means.

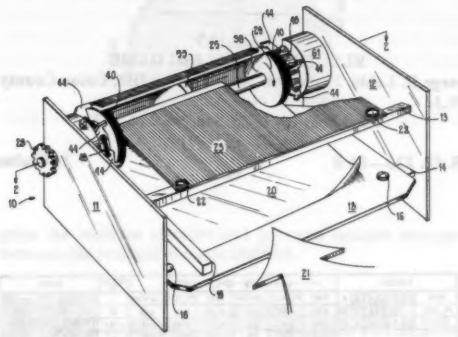
3,729,187
SHEET HANDLING DEVICE

Helmut K. Waibel, San Leandro, Calif., assignor to The Singer Company, New York, N.Y.

Filed Sept. 17, 1971, Ser. No. 181,456
Int. Cl. B65h *5/06, 29/06*
U.S. Cl. 271—51 **19 Claims**

A sheet handling device for changing the feed direction of a conveyed sheet. A hub secured axially on a rotatable shaft has a plurality of gripping members pivotable in different radial

planes disposed thereabout. Each gripping member has a finger portion engageable with a cylindrical sheet guiding surface portion of the hub, and a camming portion engageable with a camming race on a stationary block. A garter spring biases each gripping finger toward the sheet guiding surface to grip the edge of the sheet therebetween. The camming portion



and race bias each gripping finger away from the sheet guiding surface over a predetermined angular path. As the hub is rotated, the spring causes successive finger portions to grip the sheet and convey it along a curved path through a predetermined angle. Thereafter, the action of the race on the camming portion of successive fingers causes the sheet to be released in a predetermined exit direction.

3,729,188

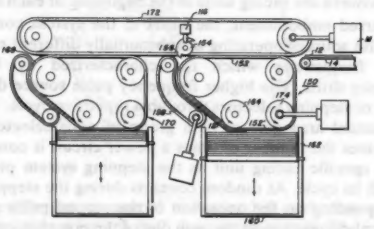
DOCUMENT STACKER APPARATUS

Paul A. Stephenson, Farmington, Conn., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 12, 1969, Ser. No. 823,865

Int. Cl. B65h *29/58*

U.S. Cl. 271—64 **1 Claim**



Document stacker apparatus wherein transport belts are continuously in contact with documents as they are transported to a stacking bin. At the stacking bin, roller means forces the trailing edge of the document downwards so that it does not interfere with the leading edge of a succeeding document.

3,729,189

ARTICLE TURNOVER CONVEYOR

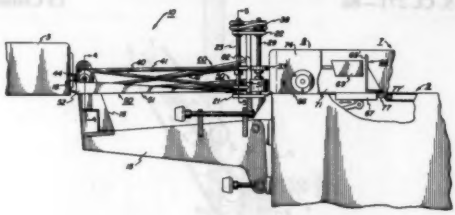
Donald W. Watson, 511 N. Wilshire Lane, Arlington Heights, Ill.

Filed Feb. 1, 1971, Ser. No. 111,505

Int. Cl. B65h *29/66*

U.S. Cl. 271—65 **11 Claims**

An article conveyor for turning articles such as envelopes over as they are being conveyed for processing as by an article addressing machine. The conveyor has an inclined ramp on which an upper edge portion of the articles ride, a lower guide to support and control the article lower edge as the article rides up the ramp, and a pair of conveyor belts cooperable with each of the ramp and guide to move the articles through the conveyor. A substantially vertical discharge roller pair eject the articles, which are on edge, into a hopper, the hopper being provided with a side wall guide to assure continued turn-



ing of the articles by gravity from a substantially vertical discharge position to a substantially horizontal feeding position in the hopper. To permit operation of the conveyor with the hopper feeder and avoid misfeeding or jamming at the feeder hopper, an interposer is provided which when actuated interrupts the article free fall until the hopper is clear.

3,729,190

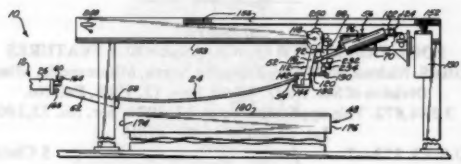
ROTATING ARM SHEET UNLOADER-STACKER

Earl D. Harris, Warminster, and Richard L. Wirsing, Collegeville, both of Pa., assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed April 14, 1971, Ser. No. 133,953

Int. Cl. B65h *29/10*

U.S. Cl. 271—85 **19 Claims**



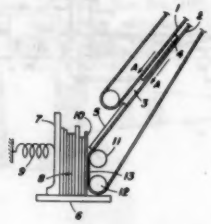
An improved apparatus for operating on sheets of material includes an unloader assembly which engages the leading end portion of a sheet and pulls it from a punch press table onto a pile of sheets. This unloader assembly includes a trolley mounted clamp assembly which is movable between a retracted or raised position and an extended or lowered position. In the retracted position the clamp assembly is clear of an area through which the punch press table moves during a punching operation. In the extended position the clamp assembly projects into the area through which the table moves during operation of the punch press. After the clamp assembly has been extended and closed to grip the leading end portion of a sheet, the trolley is moved along a path extending over the pile to pull the sheet gripped by the clamp assembly from the punch press. During at least a portion of this movement of the trolley, a trailing portion of the sheet engages a support chute to maintain the sheet suspended above the pile. The sheet is deposited on the pile without unnecessarily disturbing the uppermost sheet on the pile by retracting and opening the clamp assembly to release the leading end portion of the sheet as the trailing end portion of the sheet moves clear of the support chute and onto the pile.

3,729,191

OPEN TYPE STACKING DEVICE

Shoichiro Yoshimura; Kazuyoshi Suda, and Saburo Kagoshima, all of Minato-ku, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed May 26, 1971, Ser. No. 147,147
Claims priority, application Japan, June 2, 1970, 45/47700
Int. Cl. B65h *31/00*
U.S. Cl. 271—86 **13 Claims**



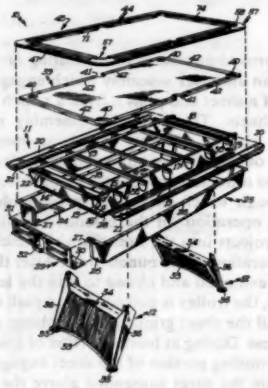
A stacking device, which automatically stacks letters, postcards or the like sequentially transported thereto, includes first and second channels for accomodating the letters and conveyor means interposed between said first and second channels for conveying stacked letters from said first channel to said second channel. The respective first and second channels are formed into a V-shape and the conveyor means are arranged in two adjacent planes which are formed into a corresponding V-shape, whereby the adjacent two sides of each of the stacked letters are supported within said channels and on said channels and on said adjacent two planes such that each letter is positioned to be in and maintain its correct orientation. The stacking operation of the sequentially transported letters is executed at the first channel and a removal operation of stacked letters may be performed at the second channel such that both operations may be performed independently of each other.

3,729,192

POOL TABLE WITH QUICK-ASSEMBLY FEATURES

Otto S. Nielsen, 4875 Sorell Avenue North, Minneapolis, Minn.

Division of Ser. No. 774,760, Nov. 12, 1968, Pat. No. 3,584,872. This application Sept. 17, 1970, Ser. No. 73,140
Int. Cl. A63d *15/00, 15/06*
U.S. Cl. 273—7 **5 Claims**



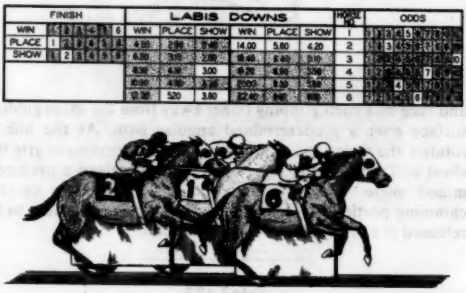
A pool table is comprised of a bed mounted on a steel frame which is supported by legs and which is capable of ready assembly from a disassembled condition without the use of special tools or skills. A rail and bumper structure is mounted on the bed and is releasably connected to the frame by bolts so that the bed is clamped between the rail and bumper structure and the frame. Additionally, the bumper structure is snap fit to the rail structure. A fabric cover is provided for each of the bumper structure and the bed and each cover is releasably clamped between portions of the bed and the rail and bumper structure to permit ready removal and replacement thereof.

3,729,193

ELECTRONIC RACING GAME

George H. Labis, 27 Possum Way, Murray Hill, Union County, N.J.

Filed Feb. 18, 1971, Ser. No. 116,347
Int. Cl. A63f *9/14*
U.S. Cl. 273—86 B **24 Claims**



A method and system for racing a plurality of motor driven units along a track which combines a random factor, not subject to control, with manually actuated means for establishing odds between the racing units at the beginning of each race. In a preferred embodiment, the heart of the system comprises two pulse sources operating at substantially different nonharmonic frequencies which are characterized by built-in frequency drifts. The higher frequency pulse source drives a system of stepping selectors through a repetitive cycle. The initial manual arrangement of a group of odds selector dials determines the number of times a power circuit is completed to any specific racing unit as the stepping system proceeds through its cycle. At random contacts during the stepping cycle, depending on the operation of the second pulse source, electrical current passes through one of the power circuits momentarily completed, to drive one or another of the racing units to spurt ahead. This continues until one or more of the units cross an arbitrary finish line. In a preferred embodiment, the racing units are motor driven horses. The odds manually set on each of the horses at the beginning of the race are also indicated on an electronic tote board, which is electronically triggered to indicate Win, Place and Show, at the end of each race, and also, the amount paid on each of the winning horses. Additional features include means for setting and counting races of more than one lap.

3,729,194

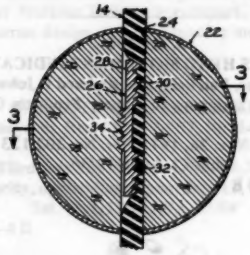
BASEBALL PRACTICE DEVICE

Thomas G. Barnett, P.O. Box 422, Stigler, Okla.

Continuation-in-part of Ser. No. 864,852, Oct. 6, 1969. This application June 3, 1971, Ser. No. 149,428
Int. Cl. A63b *69/40*
U.S. Cl. 273—26 E **2 Claims**

An elongated resilient element extends vertically between and is connected with an upper and lower support. A ball hav-

ing a diametric bore surrounds the resilient element intermediate its ends. A lock means, within the bore of the ball,



grips the resilient element and prevents relative movement between the resilient element and ball.

3,729,195

HOLLOW BALL INCLUDING FLEXIBLE TETHERING LINE

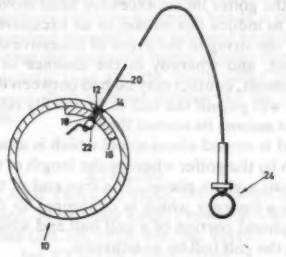
Peter Murray Bruce Hutt, New Germany, and Ian Gavin Gormley, Durban, both of Republic of South Africa, assignors to Swingball Investments (Proprietary) Limited, Durban, Republic of South Africa

Continuation-in-part of Ser. No. 857,699, Sept. 15, 1969, abandoned. This application July 19, 1971, Ser. No. 163,746

Claims priority, application South Africa, Sept. 20, 1968, 686085; April 3, 1969, 692418

Int. Cl. A63b *43/02*

U.S. Cl. 273—58 C **4 Claims**



A flexible line is secured to a rounded anchoring element located inside a hollow ball, e.g., a tennis ball. The rounded anchoring element bears against an elongated curved base member which bears against the inside surface of the ball and conforms to the curvature thereof. The curved base member includes an integral raised portion which extends into an opening in the ball. The flexible line is knotted after being passed through the raised portion, base member and anchoring element. The width of the curved base member is substantially equal to the diameter of the opening in the ball.

3,729,196

METAL BAT

Jesse H. Heald, Jr., Tullahoma, Tenn., assignor to Worth Bat Company, Inc., Tullahoma, Tenn.

Filed Oct. 1, 1970, Ser. No. 77,199

Int. Cl. A63b *59/06*

U.S. Cl. 273—72 A **5 Claims**

A baseball bat having a hollow metal casing formed from a tube by swaging to form a conventional bat-shaped casing with the barrel end rolled over to form an inturned lip to interlock with a grooved end plug. A handle grip covers the handle end of the casing, and the interior of the casing is filled with a sound-absorbing wadding. The interior of the handle end of

the casing is reamed out to obtain a center of gravity at a desired point forward of the midpoint of the bat.

3,729,197

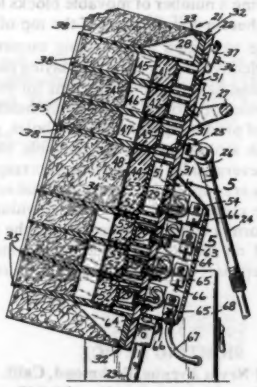
ARCHERY TARGET HAVING PRESSURE SENSITIVE SCORE INDICATING BAGS

Dale A. Swanson, 5028 Glendale Road, Mound, Minn., and Wilmur B. Blackaby, 3308 Wynmore, Waco, Tex.

Filed March 1, 1971, Ser. No. 122,573

Int. Cl. F41j *3/02*

U.S. Cl. 273—102.2 R **16 Claims**



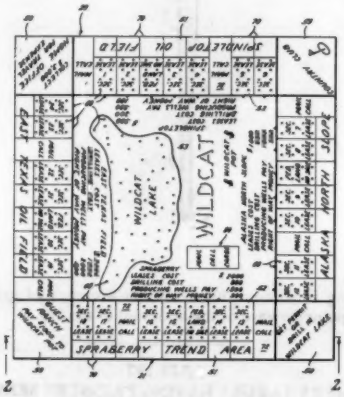
A portable archery target adapted for use with automatic scoring apparatus. The score sensing operation of the target comprises a plurality of inflatable pressure bags conforming in shape to conventional scoring areas on a target; e.g., a plurality of annular areas concentrically disposed with respect to a bulls-eye. The pressure bags are carried by a target frame and each includes a protective facing to preclude bag rupture by an arrow which strikes the facing and generates a scoring pressure pulse. An arrow deflector carried by the frame and projecting forwardly from the pressure bags defines the scoring areas and obviates the difficulty of scoring arrows which strike between the scoring areas. Disposed within the deflector is a thickness of energy absorbing material which the arrows pierce before striking the bag facing. The target is fully portable and includes collapsible legs which are adjustable to angularly position the target for shooting from various distances.

3,729,198

OIL FIELD BOARD GAME APPARATUS

Donald H. Shaffer, Fort Worth, Tex., assignor to William J. Darby and John L. Abbott, all of Fort Worth, Tex., a part interest to each

Filed May 3, 1971, Ser. No. 139,500
Int. Cl. A63f 3/00
U.S. Cl. 273—134 AC **1 Claim**



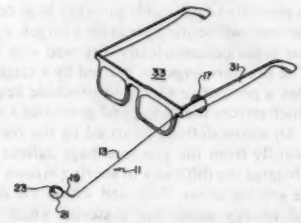
An oil field game which includes a playing board having markings thereon whereby it is divided into surface areas including corner areas and elongated areas extending between the corner areas, the board being hollow and having internal partitions whereby it is divided into compartments corresponding substantially to the surface areas, the elongated compartments having a number of movable blocks loosely and slidably disposed therein and portions of the top of the board coinciding with the elongated areas having numerous small holes therein for selective engagement by playing pieces simulating drilling rigs and having depending pins for selective insertion, in the manner of probes, in the small holes to determine the location of producing wells and dry holes, depending on whether the pin strikes one of the movable blocks. The spaces along the several sides of the board corresponding to the elongated areas are subdivided into individual subdivisions or sections and the corner areas, with the individual subdivisions or sections, form a continuous path along the peripheral edge of the board on which individual player markers are caused to move stepwise, one space at a time, in response to rolling of dice.

3,729,199

SIGHTING DEVICE

Elof Granberg, 201 Nevin Avenue, Richmond, Calif.

Filed Dec. 23, 1970, Ser. No. 100,849
Int. Cl. A63b 69/36
U.S. Cl. 273—183 B **5 Claims**



A sighting device capable of being secured to a wearer's head comprising a single length of continuous wire having a sight member formed at one end thereof for aligning the wearer's eye with an object and a clip means formed at the other end of the wire for removably securing the device to the wearer's head.

3,729,200

GOLFER'S HEAD MOVEMENT INDICATOR

Benjamin M. Hines, Fairfield, and Richard I. Johnson, Easton, both of Conn., assignors to Timely Products Corporation, Fairfield, Conn.

Filed Nov. 26, 1971, Ser. No. 202,123
Int. Cl. A63b 69/36
U.S. Cl. 273—183 B **11 Claims**

A golf training device which will enable any undesirable head movement of a player during a golf swing to be rendered self-detecting. This is attained by a flexible cord having one end attached to the golfer and the other end releasably connected to the ball so as to effect either a positive displacement of the golf ball prior to contact being made with the club whenever the golfer incurs excessive head movement during a golf swing to induce mis-stroke, or an excessive accumulation of slack in the string in the event of excessive dip of shoulders and/or head, and whereby in the absence of any excessive head movement, contact may be had between the club and the ball which will permit the ball to be readily released from the cord and to assume its normal flight.

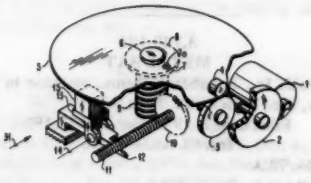
The cord is wound about a reel which is attached to a head piece worn by the golfer whereby the length of the cord can be varied to suit a given player. The free end of the cord is provided with a fastener which is contoured to complement an outer peripheral portion of a golf ball and which is releasably secured to the golf ball by an adhesive.

3,729,201

MINIATURE DISC DICTATION MACHINE FEATURING ABSOLUTE SYNCHRONIZED DISC-TRANSDUCER DRIVING ARRANGEMENT

William L. Dollenmayer, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

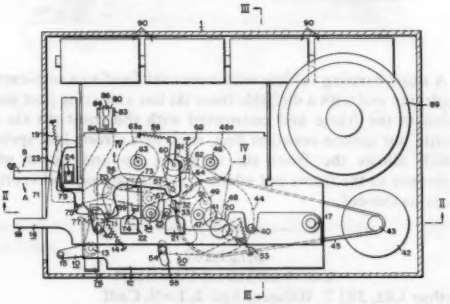
Filed Dec. 18, 1970, Ser. No. 99,568
Int. Cl. G11b 17/00
U.S. Cl. 274—4 H **1 Claim**



A miniaturized dictation machine has complete facilities for recording and reproducing sound from a magnetic disc record

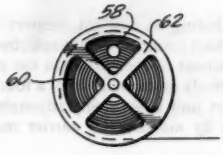
medium. The machine features absolute synchronized driving of an inserted disc record member and a sound head transducer to trace a helical signal path on the disc member, and a pressure pad structure that insures good sound head to disc contact. Other features include a compact, highly efficient sound head carrier design, and backspacing mechanisms.

3,729,202
CASSETTE TAPE RECORDER
Rinske Wakabayashi, Rm. 1102, 2-257, Nishi-Ohkubo, Tokyo, Japan
Filed July 13, 1970, Ser. No. 54,338
Claims priority, application Japan, July 12, 1969, 44/54992
Int. Cl. G11b *15/32, 23/04*
U.S. Cl. 274—4 D **3 Claims**



A cassette tape recorder, wherein, when a cassette is placed on a deck, a main lever carrying magnetic heads, a pinch roller and the other required members are released to move toward the cassette, so that the magnetic heads engage the stretched portion of a magnetic tape and the pinch roller pinches the tape with a capstan shaft to drive the tape by the rotation of the capstan shaft.

3,729,203
TAPE SIDE AND TRACK DIRECTION INDICATION
William C. Kinard, 3710 Alder Lane, Pasadena, Calif.
Filed Oct. 16, 1970, Ser. No. 81,427
Int. Cl. G11b *27/10, 23/40*
U.S. Cl. 274—41.4 **3 Claims**

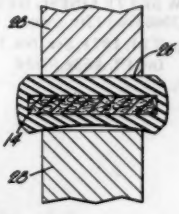


A reel-to-reel magnetic recording tape is indexed with symbols such as numerals, letters or colored dots, to identify the way the tape is wound on its reel so the user may determine which track on the tape will be played back when played on a tape player. Indexing means such as a colored strip extending lengthwise along at least one edge of the tape identifies the track that will be played back, and also marks the directions of tracks, recorded on the tape for use in properly splicing the tape.

3,729,204
SEALING SLEEVE, ESPECIALLY FOR RADIAL SHAFT SEALING RINGS
Gustav Augustin, Heilbronn/N., Germany, assignor to Kupfer Asbest Co. Gustav Bach, Heilbronn/N., Germany
Filed Aug. 10, 1970, Ser. No. 62,559
Claims priority, application Germany, Jan. 16, 1969, P 19 41 675.2
Int. Cl. F16j *15/32, 15/54*
U.S. Cl. 277—134 **8 Claims**

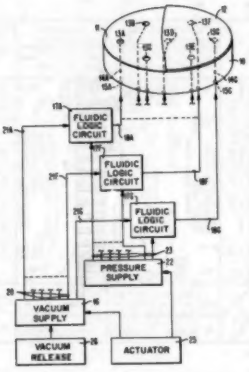
A sealing sleeve, especially for a radial shaft sealing ring with an inwardly located annular sealing lip connected by an annular diaphragm with an outer holding member in which said diaphragm is considerably thinner than the radial thickness of the sealing lip and the thickness of said holding member, while said diaphragm is reinforced by circularly spaced ribs.

3,729,205
GASKETS
Michael Kwok, 158 Cedar Lane, Princeton, N.J.
Continuation-in-part of Ser. No. 760,118, Sept. 9, 1968, abandoned. This application Jan. 7, 1971, Ser. No. 104,575
Int. Cl. B26d *53/00*
U.S. Cl. 277—229 **3 Claims**



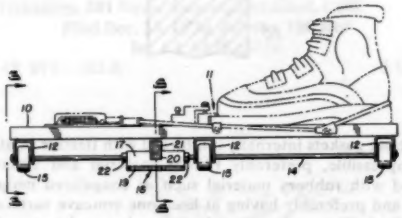
Rubber gaskets internally reinforced with flexible relatively incompressible, preferably fibrous material and externally coated with rubbery material such as coagulated neoprene latex and preferably having at least one concave surface are described. The preferred gaskets are designed to receive a structure to be sealed within the concave surface so that the structure contacts the concave surface in at least two sealing lines. The gaskets are further characterized by having relatively thin rubbery coatings on certain surfaces and relatively thicker coatings on other surfaces in order to provide improved sealing integrity; the thickness of said relatively thin and thick coatings being specified. Methods of making the gaskets are also described.

3,729,206
VACUUM HOLDING APPARATUS
Rene P. Cachon, Wappingers Falls; Ariel L. Perlmann, Poughkeepsie, and Michael A. Schorr, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 21, 1971, Ser. No. 191,270
U.S. Cl. 279—3 7 Claims



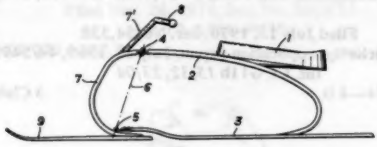
Automatically operated vacuum chuck apparatus employs fluidic logic selectively to retain semiconductor wafers or parts of broken wafers during processing. The chuck has vacuum connectors communicating with ports in a retaining surface that holds the wafer or part of the wafer. Individual fluidic logic circuits are connected in parallel to respective ones of these connectors and ports and in common to vacuum and pressure supplies. On apparatus actuation, those ports covered by the wafer or part thereof are sensed and vacuum is applied only to these ports under the control of the individual fluidic logic circuits.

3,729,207
SNOW SKI TRAINING DEVICE
Schuyler Reynolds, 3068 East 13th Avenue, Columbus, Ohio
Filed April 14, 1971, Ser. No. 133,911
Int. Cl. A63c 17/14
U.S. Cl. 280—11.2 3 Claims



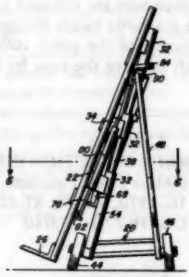
A training device for skiers in the form of a pair of skate boards for attachment to the feet of the skier and adapted for sidewise rolling movement over a supporting floor surface with a friction brake responsive to sidewise tilting or "edging" of the boards to control sidewise rolling while permitting sidewise pivoting of the boards.

3,729,208
SNOW RUNNER
Erich Brenter, Haide 163, Hallein, Austria
Continuation-in-part of Ser. No. 714,910, March 21, 1968, Pat. No. 3,545,785. This application Dec. 4, 1970, Ser. No. 95,156
Int. Cl. B62b 13/04
U.S. Cl. 280—16 7 Claims



A snow-running vehicle with a rear ski fixed to a seat-carrying frame and with a dirigible front ski has a steering post journaled in the frame and connected with the front ski via an elastic but torsion-resistant link, such as a strong leaf spring, which allows the front ski to swing up and down with reference to the frame but which opposes canting and veering motions thereof.

3,729,209
CONVERTIBLE CARRIER
Arthur Litz, 301 E. Hilborn, Apt. 2, Lodi, Calif.
Filed March 26, 1971, Ser. No. 128,390
Int. Cl. B62b 3/04
U.S. Cl. 280—36 R 6 Claims

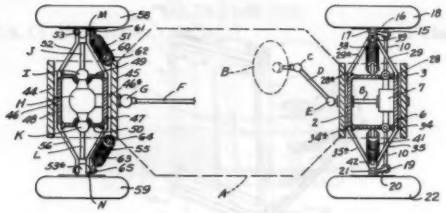


A carrier including an upright support frame adjustably mounted on a wheel assembly which selectively orientates the wheels for movement of the carrier in the manner of a hand truck or alternatively in the manner of a four wheel supported cart. The support unit is vertically adjustable relative to the wheel assembly by means of a carrier mounting jack apparatus.

3,729,210
SUSPENSION SYSTEM FOR VEHICLES
Robert J. Cunningham, Jr., 29 Orchard Lane, Bethlehem, Wheeling, W. Va.
Filed May 4, 1970, Ser. No. 34,388
Int. Cl. B60g 3/18
U.S. Cl. 280—96.2 R 2 Claims

The present suspension system for vehicles includes subframes in the vehicle to which the wheels of the vehicle are

pivotally connected and which sub-frames are pivotally connected to the vehicle main frame on an axis extending longitudinally of the vehicle to aid in maintaining the wheels vertical at all times.

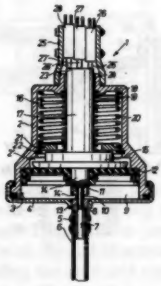


3,729,211

PNEUMATIC SUSPENSION FOR A MOTORCAR

Ortwin Engfer, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed March 12, 1971, Ser. No. 123,528
Claims priority, application Germany, March 14, 1970, P 20 12 203.6
Int. Cl. B60g 17/04
U.S. Cl. 280—124 F 9 Claims



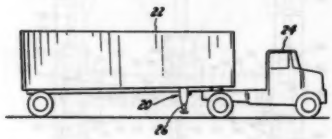
A pneumatic suspension for a motorcar has a level indicator switch having a high load position and a low load position in which it is connected by first and second switches with an electric motor-compressor, and an electromagnetic relief valve, respectively. A third switch connects the motor-compressor parallel to the level indicator switch into the circuit. The three switches are part of a control switch means, and are operated by a spring biassed pressure responsive element having a piston portion in a pressure chamber communicating with the pneumatic cylinder and piston means by which the chassis is supported on a wheel shaft. By use of a strong spring for the pressure responsive element, the operation of the fir. switch takes place only at a predetermined high load.

3,729,212

DOUBLE FLANGED SUPPORT LEG

Hyle K. Claflin, North Muskegon, and Jack T. Belke, Grand Rapids, both of Mich., assignors to Westarn Corporation, Muskegon, Mich.

Filed Dec. 21, 1970, Ser. No. 100,135
Int. Cl. B60s 9/02
U.S. Cl. 280—150.5 13 Claims



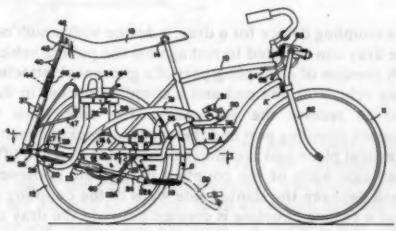
A landing gear support wherein the same leg may be used as either the right or left leg of the support. The leg includes a pair of flanges, one on each side of the upper end of the leg such that the leg may be secured with the flanges to either side of the trailer and may be used on trailers having either outside mounting plates or inside mounting plates. Gear boxes for individually moving the legs between their extended and retracted positions may be mounted to the flanges opposite those being used to mount the leg to the trailer. Alternatively, one gear box may be secured to one of the legs with a shaft extending between the two legs such that the legs may be simultaneously raised or lowered.

3,729,213

HYDRAULIC DRIVE FOR A BICYCLE

Steve A. Hudspeth, 906 6th Street, and John B. Lunsford, 1061 "B" Street, both of Springfield, Oreg.

Filed June 11, 1971, Ser. No. 152,209
Int. Cl. B62m 1/10, 1/20
U.S. Cl. 280—216 2 Claims

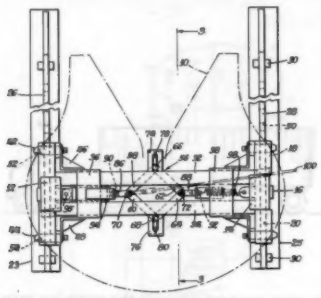


A bicycle having a fluid powered motor. A primary source of fluid for motor operation provided by a pair of hydraulic cylinders with pistons therein powered by the feet of the rider. A secondary or auxiliary source of fluid under pressure for motor operation residing in a pair of seat actuated fluid pumps. The bicycle seat is mounted to permit the weight of the rider to be yieldably supported with fluid being exhausted from said pumps upon bicycle seat movement while the rider is negotiating irregular ground surfaces. An additional source of fluid pressure may be provided by still another cylinder operatively coupled to the front fork of the bicycle.

3,729,214
ADJUSTABLE FIFTH WHEEL MOUNTING

Harry William Mulcahy, Lansing, Ill., and AMSTED Industries Incorporated, Chicago, Ill.

Filed Aug. 27, 1971, Ser. No. 175,553
Int. Cl. B62d *53/06*
U.S. Cl. 280—407 5 Claims

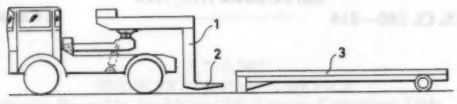


A fifth wheel is slideably mounted on a truck frame so as to be longitudinally movable along the frame. Aligned horizontal openings in the frame and fifth wheel mounting are engaged by movable pins actuated by a single toggle linkage, which is in turn actuated by a power cylinder or a manually operated rod.

3,729,215
COUPLING DEVICE FOR A DRAY

Ilmari Paakkinen, 57210 Nojanmaa, Finland, assignor to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Nov. 18, 1971, Ser. No. 200,032
Claims priority, application Finland, Nov. 20, 1970, 3134/70
Int. Cl. B62d *53/06*
U.S. Cl. 280—425 A 5 Claims



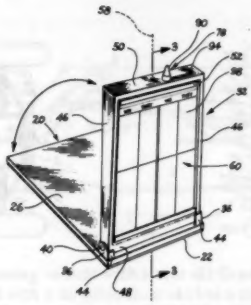
In a coupling device for a dray, a device with which one end of the dray can be lifted to rest against the pulling vehicle and which consists of a coupling part of a gooseneck attached to a pulling vehicle at one end and a coupling pocket in the dray meant to receive the gooseneck. The side walls of the gooseneck coupling part and the coupling pocket deviate from the vertical plane and are dimensioned so that, when lifted the slanted side walls of the coupling part of the gooseneck are wedged between the slanted side walls of the coupling pocket so that a pulling coupling is created between the dray and the pulling vehicle.

3,729,216
GAME SCORE DISPLAY DEVICE

Charles Hahto, and Harry A. Schneirow, both of 1755 North Berendo Street, Los Angeles, Calif.

Filed June 18, 1971, Ser. No. 154,559
Int. Cl. B42d *1/00*
U.S. Cl. 281—45 10 Claims

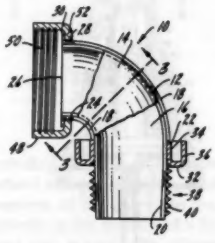
A game score display device including a particular holder adapted to hold a pad upon which a game score can be written by a score-keeper easily and conveniently and, after completion of the writing of each additional scoring change thereon, can be moved into a upright position and then positionally reversed around an upright axis so that the just-written game scoring change (and any previously written game scores) will be visibly displayed in a saliently obvious manner to all persons participating in the card or other type of game, so that it will not be necessary, as has been the prior art practice, for various game participants to frequently ask the score-keeper what the score is. The apparatus is particularly well adapted for displaying game scores of card games such as bridge, or the like, although not specifically so limited.



3,729,217
CONNECTOR AND METHOD

Irving R. Metcalf, St. Charles, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed May 10, 1971, Ser. No. 141,727
Int. Cl. F16l *15/00*
U.S. Cl. 285—183 12 Claims



A tubular body section having threads attached at one end and a nut held captive on the other end with a tool engaging portion attached intermediate the threads and nut and a method of making the foregoing including the steps of forming the tubular body section from sheet metal, positioning the tool engaging portion on the tubular body section, providing a thread form on the tubular body section adjacent one end thereof, brazing the parts together, thereafter positioning the nut on the other end of the tubular body section and deforming said other end of said tubular body section to hold the nut captive.

3,729,218

BUTT JOINING OF STEEL BARS AND CONNECTION ASSEMBLY THEREFOR

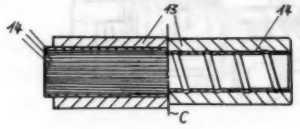
Siegfried Gutmann, Schwarzwaldstrasse 45, 76 Offenburg, Germany

Continuation-in-part of Ser. No. 690,214, Feb. 13, 1967, Pat. No. 3,551,999. This application Aug. 20, 1970, Ser. No. 65,502

Claims priority, application Austria, Dec. 6, 1967, A 11039/67

Int. Cl. F16b 7/00

U.S. Cl. 287—109 11 Claims



To butt join steel bars and maintain any tightly abutting, or accurately spaced position of the bars to be joined, wires of high tensile strength (such as piano-type wires and the like) are located right next to the rod to be joined, the entire assembly then being surrounded by a tubular sleeve which is compressed and cold flowed over the wires and the rods to be joined together; compressive force can be reduced by forming spaced upstanding ridges on the sleeve, the compressive force being applied only against the ridges. The space bridging the ends of the rods to be joined is left free of compression ridges.

3,729,219

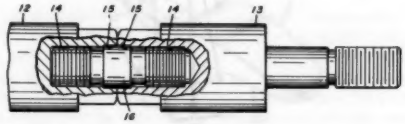
JOINT FOR CONNECTING SECTIONS OF A MEMBER SUBJECT TO CYCLIC COMPRESSIVE LOADING

Robert M. Crane, Dallas, Tex., assignor to United States Steel Corporation

Filed Dec. 24, 1970, Ser. No. 101,215

Int. Cl. F16b 7/18

U.S. Cl. 287—125 4 Claims



A joint for connecting sections of a member which is subject to cyclic compressive loading. Such joints are used, for example, in the piston rods of single-acting reciprocating pumps, and may fail through fatigue. The joint comprises a stud threadedly engaged with the end of at least one of the sections, and means surrounding the stud and transmitting loads independently of the stud. The stud has a substantially lower modulus of elasticity than the load-transmitting means.

3,729,220

LOCK ARRANGEMENT FOR A DOOR OF A MOTOR VEHICLE

Rudolf Andres, Sindelfingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Unterturkheim, Germany

Filed March 25, 1971, Ser. No. 128,034

Int. Cl. E05c 1/06

U.S. Cl. 292—336.3 8 Claims

A lock of a door of a motor vehicle is unlocked by operation of an actuating handle located an the inner side of the door and at a distance from the lock, the actuating handle being connected by a linkage to the lock. The linkage is of the parallelogram type and includes a two armed lever connected to the actuating lever and a second two-armed lever arranged in the region of the lock, the arms of these levers being interconnected by two mutually parallel rods.

3,729,221

COLLISION ACTUATED BUMPER

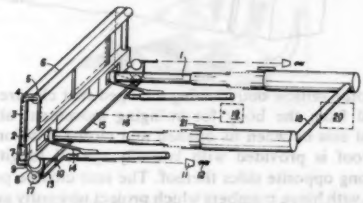
Hubert Granig, Missingdorfstrasse 13/13, Vienna, Austria

Filed Feb. 4, 1969, Ser. No. 796,395

Claims priority, application Austria, Feb. 5, 1968, 8A1090/68

Int. Cl. B60r 19/12

U.S. Cl. 293—9 11 Claims



Piston-cylinder means are connected to a bumper bar and are connected to gas-supplying means for supplying compressed gas to said piston-cylinder means. The piston-cylinder means are adapted to respond to an expansion said supply of gas. Venting means are provided for venting said piston-cylinder means.

3,729,222

MEANS FOR CONNECTING MEMBERS TOGETHER

Peter Thomas Ward, Lichfield, England, assignor to Rubery, Owen & Co., Limited, Darlaston, Wednesbury, England

Filed April 14, 1971, Ser. No. 134,015

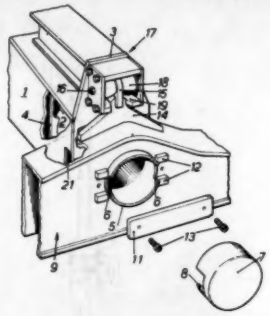
Claims priority, application Great Britain, April 21, 1970, 18,904/70

Int. Cl. B66c 1/00

U.S. Cl. 294—67 R 2 Claims

In a spreader frame incorporated in container handling equipment a cylindrical boss projects from a boom and passes

through an opening in a cross-head. Spaced, torque-taking abutments on each side of the opening engage the ends of a



key which extends through a slot in the outer end of the boss and retains the cross-head on the boom.

3,729,223

HINGED REAR CLOSURE FOR VEHICLE BODIES

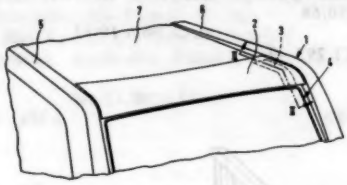
Hans-Egon Leissa, Roetgesbuettel, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany

Filed March 3, 1971, Ser. No. 120,595

Claims priority, application Germany, March 20, 1970, P 20 13 277.8

Int. Cl. B62d *35/00*; B60j *5/10*

U.S. Cl. 296—1 S **7 Claims**



In a motor vehicle body having a hinged rear closure panel supported from the body for swinging movement about a horizontal axis between its opened and closed positions, the vehicle roof is provided with laterally spaced longitudinal ridges along opposite sides thereof. The rear closure panel is provided with hinge members which project upwardly and forwardly therefrom between these ridges and are pivotally connected to the respective ridges to support the closure panel for swinging movement about a horizontal axis which is displaced above and forwardly of the closure panel so that the latter may be swung upwardly to an open position in which both the panel and its hinged structures are entirely removed from the rear opening of the vehicle normally covered by the closure panel. An air deflector carried by the hinges between the said ridges is spaced above the roof and curves downwardly in spaced relation to the rear closure panel to define an air flow passage through which air moving rearwardly over the roof is deflected downwardly across the closure panel.

3,729,224

PICKUP TRUCK CAMPER DEVICE

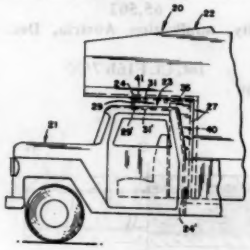
Milton R. Hathaway, Jr., 30 Parlee Road, Chelmsford, Mass.

Filed Sept. 21, 1971, Ser. No. 182,429

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 MC **2 Claims**

This invention comprises a camper and pickup truck device which has a compartment passageway structure mounted to the rear of the pickup truck. The passageway structure is slidably adapted to fit into an opening in different size pickup truck cabs. The outer edge of the compartment passageway structure abutts the front wall of the camper. The front wall of the camper has a passageway therethrough. A pair of doors



are pivotally mounted to the inner edge of the front wall of the passageway structure and are adapted to pivot forward into the cab to open the passageway between the camper and the cab of the pickup truck.

3,729,225

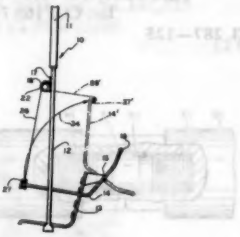
WINDSHIELD FOR SKI-LIFT CHAIR

Phillip D. Savage, Owls Head, N.Y., assignor to Hall Ski-Lift Company, Inc., Watertown, N.Y.

Continuation-in-part of Ser. No. 158,689, July 1, 1971, abandoned. This application Oct. 29, 1971, Ser. No. 193,656

Int. Cl. A47c *7/66*

U.S. Cl. 297—184 **2 Claims**



A sheet of transparent flexible plastic resin has one end attached to a roller rotatably mounted to the support structure of a ski-lift chair above the seat. The other end of the sheet is secured to an elongated rigid member adapted to be quickly connected to the chair safety bar in front of the seat. The roll is spring-biased to wind the sheet thereon and when the safety bar is raised the sheet is rolled up out of the way in loading and unloading the chair.

3,729,226

SINGLE PEDESTAL TRANSIT CHAIR

Chester J. Barecki, Grand Rapids, Mich., assignor to American Seating Company, Grand Rapids, Mich.

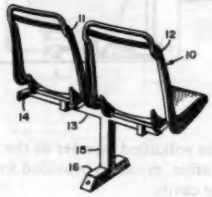
Filed June 4, 1971, Ser. No. 149,947

Int. Cl. A47c *3/00*

U.S. Cl. 297—232 **6 Claims**

A transit chair has a beam supporting two seats and has a side rail for attachment to the side of a vehicle, the beam being supported about midway by a single pedestal which is carried

on a hollow foot extending longitudinally of the vehicle floor, the foot being provided at its ends with bolt openings for receiving bolts anchoring the foot to the floor and the foot being cut away along an angle above the openings to provide vertical access for a socket wrench, the ends of the foot being releasably closed by a closure cap having releasable wing lugs interlocked with side openings in the foot.



3,729,227

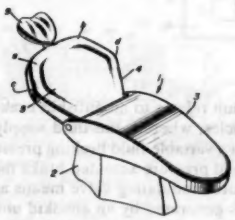
DENTAL CHAIR

Sadayasu Ohta, 161, Koaza-Kitsune-Gawa, Ohaza-Tanabe, Tanabe-cho, Tsuzuki-gun, Kyoto-fu, Japan

Filed June 11, 1971, Ser. No. 152,247

Int. Cl. A47c *7/36, 7/02*

U.S. Cl. 297—391 **1 Claim**



A dental chair comprising a plate-shaped back, both side parts of which corresponding to the portions below both shoulders of the patient are curved inwards, so that both upper portions of his arms and elbows may be supported in comfort by the said inwardly curved portions on both sides of the back.

3,729,228

VEHICLE SEAT PROVIDED WITH A HEAD REST

Masahiko Inoue, and Takashi Saito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

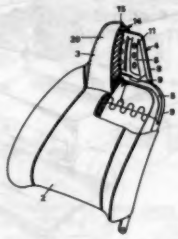
Filed April 1, 1971, Ser. No. 130,214

Claims priority, application Japan, April 10, 1970, 45/30592

Int. Cl. A47b *11/00*

U.S. Cl. 297—396 **1 Claim**

A seat having a head rest wherein the head rest is formed integrally with a back of the seat. Said seat comprises a reinforcement for the head rest provided on the top of a back frame, a shock absorber for the head rest formed as a unit in the shape of a bag for covering said reinforcement for the head rest and an upper portion of said back frame, and means for firmly securing said shock absorber for the head rest to the back.



3,729,229

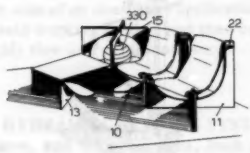
MODULAR FURNITURE

Lawrence D. Minsker, 102 Pleasant View Drive, Jamestown, N.Y.

Filed Oct. 7, 1970, Ser. No. 78,779

Int. Cl. A47c *4/02*

U.S. Cl. 297—442 **5 Claims**



The specification discloses a modular article of furniture made up of a number of modules, each of the modules is made up of two panels which may be plywood or the like. The panels are in pairs similar to each other, each have a semi-circular cutout in one side and the panels are arranged at right angles to each other. The upstanding arms formed by the cutouts can be used to support the edges of support surfaces, such as chairs, tables, lamps, and the like, and the arms can be connected together by rods, if desired, to hold them together in a modular furniture assembly with the rods extending through the arms of more than one support.

3,729,230

DIVIDED BODY FOR DUMP TRUCKS

George A. Tomlinson, Jr.; Tommie J. Long, and Gene C. Galloway, all of Tulsa, Okla., assignors to Unit Rig and Equipment Company, Tulsa, Okla

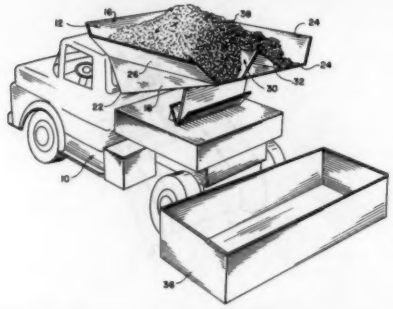
Filed Aug. 3, 1970, Ser. No. 60,504

Int. Cl. B60p *1/28*

U.S. Cl. 298—7 **3 Claims**

A divided dump body for a dump truck particularly designed and constructed whereby the entire load from a sin-

gle dump body may be loaded into a single receiving vessel or container in a manner wherein the load is substantially evenly



distributed in the container, thus eliminating the need for intermediate loading vehicles or devices.

3,729,231

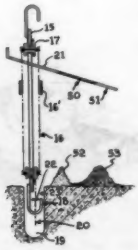
NARROW ROCK CUTTING TRENCHER

Clifford J. Evans, Glen Rose, Tex., assignor to Shields-Jetco, Inc., Dallas, Tex.

Filed April 19, 1971, Ser. No. 135,213

Int. Cl. E02f *5/08*

U.S. Cl. 299—7 **10 Claims**



A narrow rock cutting trencher having a single disk rotatably captured about a framework, and having inwardly opening trench forming buckets disposed about the outer periphery of the disk. An arc plate cooperates with the buckets so as to transport material from the trench into an overhead position as the apparatus progresses along the ground.

3,729,232

APPARATUS FOR CONVERTING SOLIDIFIED POWDERS OF ORES LOADED IN ORE TRANSPORT SHIPS INTO SLURRIES

Masanobu Sakata; Kenichi Nagata; Shigeru Nagamori, all of Ichihara, and Hideo Suzuki, Yachiyo, all of Japan, assignors to Mitsui Shipbuilding & Engineering Co., Ltd., Tokyo, Japan

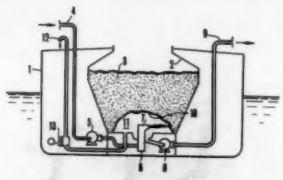
Filed May 31, 1972, Ser. No. 258,291

Claims priority, application Japan, June 7, 1971, 46/40044

Int. Cl. B65g *53/30*

U.S. Cl. 302—15 **3 Claims**

In apparatus for converting a solidified powder of ore loaded in an ore transport ship into a slurry of the type wherein a high pressure water jet is supplied to the bottom of the solidified powder of ore so that a cavity is formed at the



bottom of the solidified powder at the early stage of the converting operation, means is provided for admitting atmospheric air into the cavity.

3,729,233

VEHICLE ANTISKID BRAKING SYSTEM

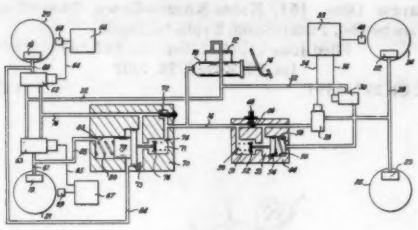
James Mangold, Tremblay-les-Gonesse, France, assignor to Societe Anonyme D.B.A.

Filed March 10, 1971, Ser. No. 122,712

Claims priority, application France, March 12, 1970, 7008933

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **3 Claims**



This invention relates to an antiskid braking system for automotive vehicles, wherein the fluid supply connection provided between a variable fluid braking pressure control source and a set of fluid pressure actuated brake motors is controlled by fluid pressure modulating valve means actuated by output control signals generated by an antiskid unit in response to a skidding condition of the brake vehicle. The fluid supply connection is provided with a restricted area fluid passage disposed between said fluid source and said modulating valve means so as to substantially limit the fluid flow rate to said brake motors upon opening of said fluid supply connection, and thereby to dampen the build-up in pressure to the brake motors.

3,729,234

BRAKE CONTROL MODULATOR

Edgar A. Hirzel, Granada Hills, Calif., assignor to Crane Co., Chicago, Ill.

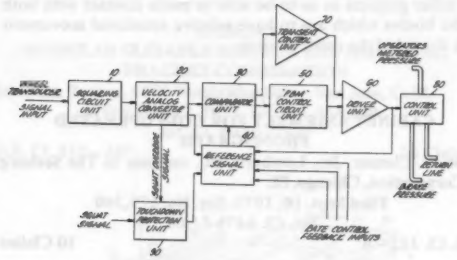
Division of Ser. No. 871,439, Oct. 22, 1969, abandoned, which is a continuation-in-part of Ser. No. 665,072, Sept. 1, 1967, abandoned. This application June 21, 1971, Ser. No. 154,959

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 BE **8 Claims**

A brake control is provided with a system for modifying the action of the brake application apparatus for the wheel of a vehicle. Information obtained from the rotation of the wheel is used to derive an analog signal indicating the braking condition. If the analog signal exceeds a predetermined threshold

level, a modulating signal is produced. The modulating signal includes the time integral function of both the positive and negative variations of the analog signal from the threshold



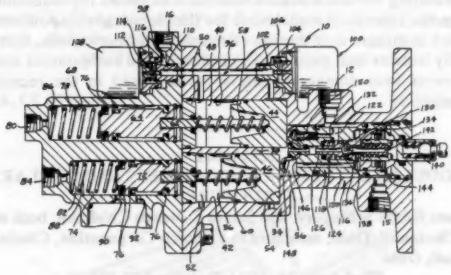
level. The circuitry for producing the modulating signal includes an integrating capacitor that is charged by said analog signal and that is discharged by current representing the predetermined threshold level.

3,729,235

INTEGRATED BRAKE BOOSTER AND ADAPTIVE BRAKING MODULATOR

Lloyd G. Bach, and Richard L. Lewis, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 3, 1971, Ser. No. 177,729
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F **19 Claims**



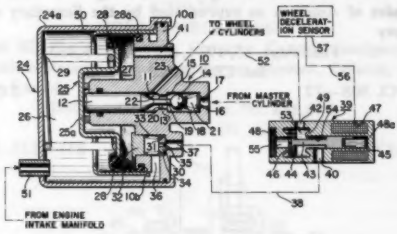
A vehicle hydraulic braking system is disclosed which includes a single device which not only provides a power assist to the vehicle operator when the brakes are applied, but also serves as an adaptive braking modulator. The device includes a housing defining a pressure chamber therewithin, and a number of pistons, one piston for each control channel of the adaptive braking system, which are slidably mounted within the chamber. When the vehicle operator effects a brake application, a valve within the housing admits high pressure fluid from a pressure source into the pressure chamber for urging the pistons in a brake-applying direction. However, when the adaptive braking system senses an incipient skid condition at one of the vehicle's wheels, pressures are equalized on the opposite ends of a corresponding one of the pistons, to thereby permit a spring to yieldably urge the piston in a brake release direction, thereby relieving the braking pressure in the affected brake.

3,729,236

ANTI-SKID BRAKE CONTROL ARRANGEMENT FOR VEHICLE WHEELS

Tosiaki Okamoto; Masami Inada, and Katuki Takayama, all of Kariya-shi, Japan, assignors to Aisin Seiki Company, Limited, Aichi-ken, Japan

Filed May 16, 1969, Ser. No. 825,350
Claims priority, application Japan, May 18, 1968, 43/33655
Int. Cl. B60t *8/12, 8/26*
U.S. Cl. 303—21 F **2 Claims**



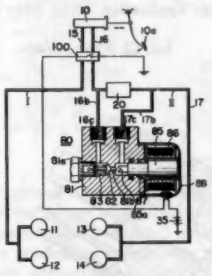
This invention relates to a hydraulic pressure control valve arrangement for automotive vehicle wheel brake systems, the latter system comprising a hydraulic master cylinder to be actuated by operating a foot brake pedal; a hydraulic brake pressure control valve assembly provided with a pneumatic servo piston means; and electromagnetic change-over valve assembly fluidically connected therewith; a skid sensor operatively connected therewith and also with a vehicle wheel; and wheel cylinder means for applying hydraulic braking effort upon vehicle wheels. The improvement comprises the provision of a control valve of orifice type in said hydraulic brake pressure control valve assembly, for bringing the working stroke of said servo piston to realize in a rapid way during reduction of the effective volume of the hydraulic circuit leading from said pressure control valve assembly to wheel cylinder means in case of an overbrake application, and until a certain stage of said working stroke, and then carrying about the latter in a highly slow and continuous way.

3,729,237

SPLIT HYDRAULIC BRAKING SYSTEM

Masakazu Ishikawa, and Hiroyuki Oka, both of Aichi-ken, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed Oct. 1, 1970, Ser. No. 77,150
Claims priority, application Japan, Oct. 12, 1969, 44/78122
Int. Cl. B60t *15/46*
U.S. Cl. 303—84 A **20 Claims**



A hydraulic brake system is formed of two separate hydraulic circuits, one for the front wheels and the other for the rear wheels of an automotive vehicle. Both circuits are connected hydraulically to a master cylinder and one of the hydraulic circuits contains a control valve assembly for varying the pres-

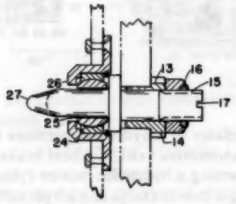
sure of the hydraulic brake fluid in that circuit. Means are provided in operative engagement with the control valve assembly for maintaining the valve assembly in the inoperative condition when a failure occurs in the other circuit. As a result of the failure, the circuit containing the valve assembly operates at the pressure supplied from the master cylinder.

3,729,238

SELF-ALIGNING, ADJUSTABLE ANCHOR PIN ASSEMBLY

Arthur A. Arnold, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 13, 1971, Ser. No. 179,863
Int. Cl. F16c *23/00*
U.S. Cl. 308—72 **2 Claims**



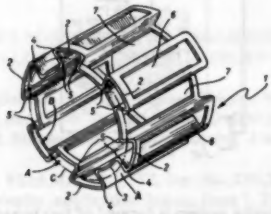
An anchor pin assembly is both adjustable and self-aligning. The assembly includes an anchor pin substantially cylindrical in shape for mounting on a fixed structure. The anchor pin is received into a bearing comprising two members. The first bearing member is mounted in a fitting having means for attachment to a body to be supported against mechanical shock and includes internal spherical surfaces. A second bearing member has external spherical surfaces which are received and movably supported within the internal spherical surfaces of the first bearing member and the second bearing member has an internal cylindrical bore for slidingly engaging and receiving the cylindrical surfaces of the anchor pin. In a preferred embodiment, the anchor pin is flanged and has an eccentric stud portion which is received and supported within an eccentric, substantially cylindrical, bearing member to afford first and second degrees of pivotal positioning to perfect the alignment of the anchor pin with the central axis of the bearing into which it is received and supported.

3,729,239

ROLLER BEARING AND CAGES THEREFOR

Domenico Camosso, Turin, Italy, assignor to RIV-SKF Officine di Villar Perosa S.p.A., Turin, Italy

Filed May 7, 1971, Ser. No. 141,315
Claims priority, application Italy, May 22, 1970, 68762 A/70
Int. Cl. F16c *33/46*
U.S. Cl. 308—217 **14 Claims**



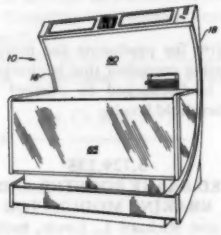
A roller bearing cage in which the rollers are held in pockets formed between adjacent radially projecting longitudinally extending teeth is disclosed. The teeth may be either inwardly or outwardly radially directed or alternately inwardly and outwardly radially directed. In the latter case the pocket formed between adjacent similarly directed teeth is provided in a cavity in the corresponding oppositely directed tooth. The teeth are undercut so that the rollers can be snapped into place in the pockets and located in position by the teeth. Each pocket has an aperture in its base through which the curved surface of the roller projects so as to be able to make contact with both of the bodies which are to have relative rotational movement with the aid of the roller bearing.

3,729,240

CABINET ASSEMBLY FOR COIN OPERATED PHONOGRAPH

Leon C. Clouser, Jr., Lombard, Ill., assignor to The Seeburg Corporation, Chicago, Ill.

Filed Sept. 10, 1971, Ser. No. 179,340
Int. Cl. A47b *81/06*
U.S. Cl. 312—8 **10 Claims**



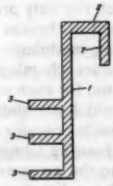
A cabinet assembly for coin operated phonographs has an enclosed vibration isolating speaker chamber at the base thereof, which forms a supporting structure for the record changer and for the side and the back walls of the cabinet assembly. The speaker chamber prevents transmission of sonic and mechanical vibrations to the record changer, thereby eliminating vibration caused distortion of sound reproduction from the records. An enclosure for the electrical components, which is mounted at the top of the side and back walls, thermally isolates heat produced by the electrical components and prevents heat damage to the records stored in the record changer.

3,729,241

MODULAR EXTRUSION FOR CABINETS AND SIMILAR STRUCTURES

James Henry Schippers, and James Edwards Chisholm, both of Cincinnati, Ohio, assignors to Formica Corporation, Cincinnati, Ohio

Filed April 26, 1971, Ser. No. 137,301
Int. Cl. A47b *77/00*
U.S. Cl. 312—107 **12 Claims**



A basic extrusion is in the form of a "J" on the back of the long upright. There are several extended vanes or flags, preferably three. The extrusions are in suitable lengths for assembling into cabinets using mitered corners. There is also provided a hanger channel, which can be incorporated into a

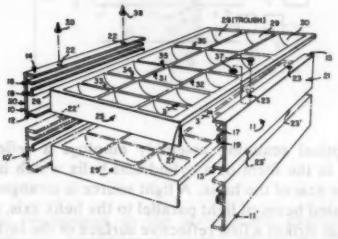
wall and from which the cabinet can hang by the channel portion forming the bottom of the J. Stacking extrusions for stacking together several J's are also provided. These extrusions fit into two J's with their bottom channels next to each other. The basic J extrusions are of strong material, preferably aluminum, but the stacking extrusions are usually of plastic having a certain amount of give.

3,729,242

MODULAR SLIDABLE MEMBER AND MOUNTING BRACKET COMBINATION

Jan Alan Barney, 6559 Northridge Drive, San Jose, Calif.

Filed May 17, 1972, Ser. No. 254,030
Int. Cl. A47b *77/00*
U.S. Cl. 312—107 **10 Claims**



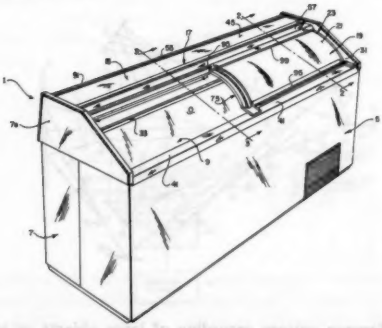
Covers a modular slidable member, e.g., a drawer or shelf and mounting bracket combination which may be stacked upwardly or downwardly to provide a set comprising a plurality of slidably mounted slidable members, e.g., drawers or shelves. The novel brackets of the invention provide not only mounting means for the slidable member but also a framework which serves to hold a plurality of slidable members together.

3,729,243

MERCHANDIZING CABINET

Donald A. Musgrave, and Paul S. McClain, both of Conway, Ark., assignors to UMC Industries, Inc., New York, N.Y.

Filed June 7, 1971, Ser. No. 150,279
Int. Cl. A47f *3/04*
U.S. Cl. 312—116 **10 Claims**



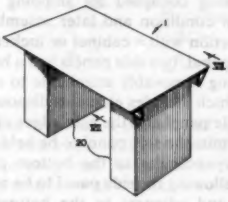
A merchandising cabinet, e.g., an ice cream dipping cabinet, having a transparent window means and a curved transparent lid closing the upper front and top of the cabinet and permitting the contents of the cabinet to be viewed by both the customer and the server with the lid opened or closed. The window means extends the length of the cabinet and comprises a front window extending upwardly at the upper front of the cabinet and a top window extending back from the top of the front window to a position above and forward of the top of the back cabinet wall providing an opening for access to the containers by the server. The curved transparent lid is slidably mounted on curved track means at its ends for sliding movement between a closed position in which the lid blocks the opening and an open position in which a customer may view the containers through the window means and the lid.

3,729,244

COLLAPSIBLE DESK

William M. Butler, Ottawa, Ontario, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed April 24, 1972, Ser. No. 246,638
Int. Cl. A47b *41/00, 3/06*
U.S. Cl. 312—195 **4 Claims**



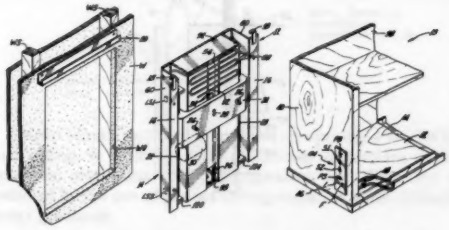
A collapsible desk made of foldable sheet material comprising a pair of folding pedestals and a separably interconnecting top assembly which includes a top panel and three adjoining folding panels on each of two opposite sides of the top panel which fold to form a pair of parallel frame members. The pedestals are interconnected with cooperating tabs and slots to the top assembly between the frame members.

3,729,245

CONCEALED ACTUATING UNIT FOR AUTOMATICALLY RAISING AND LOWERING CABINETS AND THE LIKE

Walter W. Skifstrom, 1504 W. 173rd Street, Gardena, Calif.

Filed Dec. 28, 1970, Ser. No. 101,767
Int. Cl. A47b *77/08, 67/02, 57/08*
U.S. Cl. 312—223 **1 Claim**



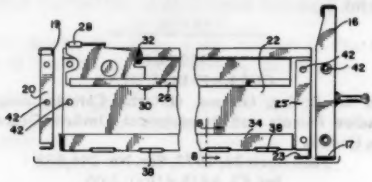
Unitary frame has guideposts which slidably support a carriage moved by a motor driven chain, the frame being easily installed in a wall opening and concealed by a cabinet on the carriage. One of the guideposts is floatingly mounted to accommodate tolerance accumulation and/or slight misalignment. The motor is reversible and controls therefor include control switches, limit switches and safety switches for stopping the motor in a positive manner at will or automatically without harm to the user or the cabinet. A constant force device provides additional lifting power and minimizes tipping of the cabinet.

3,729,246

KNOCK-DOWN DRAWER

Bob G. Harrell, and Arthur Harbaugh, both of St. Louis, Mo., assignors to Jackes-Evans Manufacturing Company, Saint Louis, Mo.

Filed July 13, 1971, Ser. No. 162,177
Int. Cl. A47b *88/00*
U.S. Cl. 312—330 12 Claims



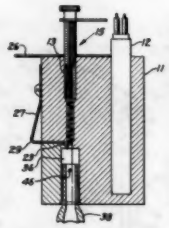
An apparatus particularly adapted for use as a drawer and capable of being collapsed for shipping in a flattened or knocked-down condition and later assembled, installed and used in connection with a cabinet or locker, having a bottom panel, a front panel, two side panels and a back panel, the bottom panel being removably attachable to each side panel by joint means which includes elements disposed along the lower edge of the side panel and the side edges of the bottom panel and which permits the side panel to be held and maintained in a position perpendicular to the bottom panel for use as a drawer while allowing the side panel to be moved to a position parallel with and adjacent to the bottom panel, or easily disconnected, for purposes of shipping. The bottom panel and side panels, when held together in a drawer position by the joint means, are attachable to the front panel and back panel by holding means disposed through flanges projecting from the edges thereof to form a conventionally shaped drawer which has no protrusions existing on its entire inside surface.

3,729,247

METHOD AND APPARATUS FOR DISPENSING PELLETS INTO LAMPS

David R. Schaller, Chagrin Falls, Ohio, assignor to General Electric Company

Filed Nov. 19, 1971, Ser. No. 200,325
Int. Cl. H01j *9/38*
U.S. Cl. 316—16 9 Claims



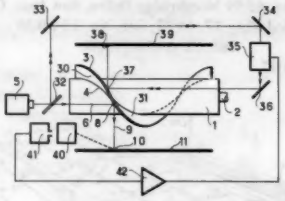
Lamp-dosing material such as indium triiodide is drawn, in molten form, into tubing of slippery plastic material such as Teflon, and allowed to solidify. A length of the tubing and its contents is placed into an elongated opening in a metal dispenser block. The dispenser block is heated to cause the plastic tubing to expand, and a plunger forces a measured length of dosing material out of the tubing. A cutter blade slices off the exposed length of material whereupon it falls into a lamp bulb which has been inserted into an opening in the dispenser block. An inert gas is flowed through the interior of the dispensing block to protect the dosing material from moisture in the atmosphere.

3,729,248

OPTICAL SCANNING ASSEMBLY WITH HELICAL-SHAPED ROTATING REFLECTOR

Michel Beduchaud, 91-Massy, France, assignor to Compagnie Industrielle Des Telecommunications CIT-ALCATEL, Paris, France

Filed June 24, 1971, Ser. No. 156,400
Claims priority, application France, June 26, 1970, 7023868
Int. Cl. G02b *17/00*
U.S. Cl. 350—7 10 Claims



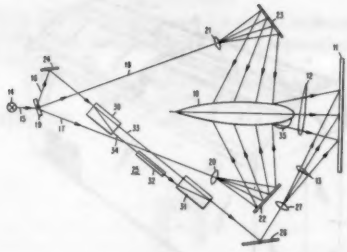
An optical scanning assembly employs a reflector constructed in the form of a cylindrical helix which is rotatable about the axis of the helix. A light source is arranged to direct a collimated beam of light parallel to the helix axis, so that the light beam strikes a first reflective surface of the reflector. Depending upon the angle of the reflective surface of the reflector with respect to a radial line of the cylinder, the beam of light from the light source will be deflected away from the axis of the cylinder in a predetermined direction. The light then strikes a desired surface and may be reflected therefrom into the photo-sensitive element for further processing. Because of the rotation of the helix-shaped reflector, the light beam from the light source is scanned back and forth along the line parallel to the helix axis.

3,729,249

METHOD AND APPARATUS FOR LARGE OBJECT INTERFERENCE PATTERN RECORDING

Millard A. Habegger, Poughkeepsie, and Glenn T. Sincerbox, Wappingers Falls, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 12, 1968, Ser. No. 744,404
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 14 Claims



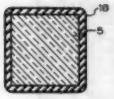
Interference pattern recording of large objects or scenes having dimensions exceeding the coherence lengths of available light sources is accomplished. The recording is performed by illuminating the storage medium with a plurality of reference beams all of which are collinear and the scattered radiation from the object. A path length difference not exceeding and preferably slightly less than the coherence length of the radiation sources is introduced into each successive reference beam.

3,729,250

ACOUSTO-OPTIC FILTER HAVING MEANS FOR DAMPING ACOUSTIC RESONANCES AND STRAY LIGHT

John A. Kusters, San Jose; David A. Wilson; Laurence M. Hubby, Jr., both of Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif., a corporation of California

Filed July 23, 1971, Ser. No. 165,629
Int. Cl. G02f 1/24
U.S. Cl. 350—149 2 Claims



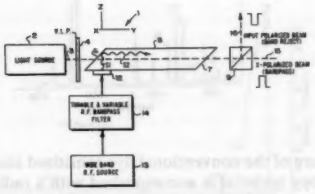
Acoustic resonances in the acoustically excited photoelastic optically birefringent crystal of an acousto-optic filter are damped by coating the side of the photoelastic crystal with an acoustic absorbing medium, such as tungsten powder loaded epoxy, whereby undesired acoustic resonances are damped. The acoustic impedance of the coating preferably matches the acoustic impedance of the crystal The outside surface of the crystal is preferably cleaned and roughened to assure an intimate bond between the absorbing material and the crystal medium.

3,729,251

ACOUSTO-OPTIC FILTER HAVING ELECTRICALLY VARIABLE RESOLUTION

John R. Hearn, Los Altos Hill, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed June 16, 1971, Ser. No. 153,787
Int. Cl. G02f 1/24
U.S. Cl. 350—149 4 Claims



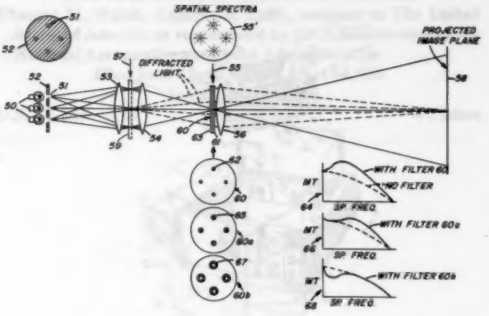
The optical bandpass or band reject of an acousto-optic filter is tailored in width and amplitude by tailoring the width and amplitude of a band of radio frequency acoustic waves excited in the photoelastic birefringent filter medium and on which the light beam is collinearly diffracted to produce the output light beam of the acousto-optic filter.

3,729,252

OPTICAL SPATIAL FILTERING WITH MULTIPLE LIGHT SOURCES

Clarence N. Nelson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed June 5, 1970, Ser. No. 43,870
Int. Cl. G02b 27/38
U.S. Cl. 350—162 SF 16 Claims



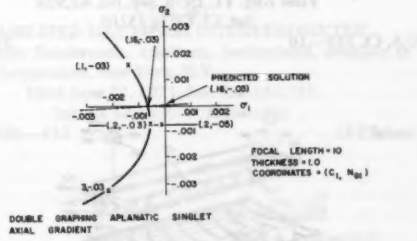
An optical system in which a plurality of light sources is used in conjunction with a spatial filter to modify at least some of the details of a projected image so as to increase or decrease the image contrast with respect to such details.

3,729,253

OPTICAL SYSTEM COMPRISING A SINGLE ELEMENT HAVING A CONTINUOUSLY VARYING INDEX OF REFRACTION

Duncan Thomas Moore, Yardley, Pa., and Peter John Sands, Garran, A.C.T., Australia, assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed May 28, 1971, Ser. No. 148,070
Int. Cl. G02b 3/00, 9/02
U.S. Cl. 350—175 GN 28 Claims



Singlet lenses, and optical systems comprising a singlet lens and a stop, in which at least third-order distortions such as spherical aberration, coma, astigmatism and distortion are reduced by the use of glasses having radial, or axial, refractive index gradients.

3,729,254

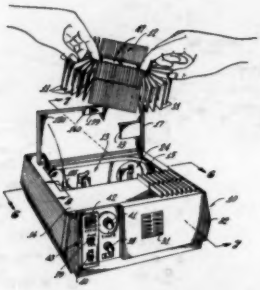
SLIDE PROJECTOR FOR UNSUPPORTED FLEXIBLE SLIDE HOLDERS

Gerald J. Frey, Santa Barbara, and Gary E. Peterson, Sun Valley, both of Calif., assignors to said Frey by said Peterson

Filed Nov. 19, 1971, Ser. No. 200,468
Int. Cl. G03b 23/08
U.S. Cl. 353—109 43 Claims

A slide projector for slides mounted on a slide holder having a series of clips around an endless flexible belt which is inserted in the projector through an access opening in the top

wall, fitted loosely around parallel rotary supporting elements permanently mounted in the recess to project toward the access opening, located at the proper level in the projector by positioning surfaces in the projector, and then tensioned by moving one of the supporting elements away from the other. The movable supporting element is positioned in one of the plurality of different zones, for slide holders of different capacities, and is spring-loaded in each zone to apply the proper tensioning force. Feeding of the slides is accomplished



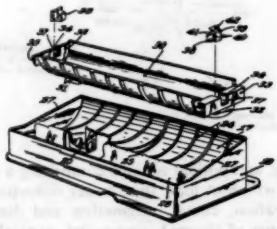
by reciprocating motor and a driver having a reversible ratchet coupling with one of the rotary elements which has teeth for engaging the overhanging end portions of alternate slips around the belt, and the driver also serves as the actuator for a positioning fork which locks the slide to be projected against one of the rotary elements. In a modified form, the driver also operates a hold-out apparatus engageable with the slides on opposite side of the one being projected and an oscillating shutter for blocking the light beam during slide changing.

3,729,255

PHOTODEVELOPMENT APPARATUS INCLUDING TRAY ASSEMBLY AND RETAINING MEANS THEREFOR

Kenneth R. Reick, Oak Brook; Emil Tiger, Highland Park, and David F. Wolff, Glen Ellyn, all of Ill., assignors to Sunbeam Business Equipment Co., Addison, Ill.

Filed Aug. 11, 1970, Ser. No. 62,926
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 **15 Claims**



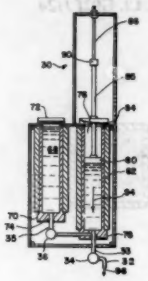
A liquid developer tray is arranged to be supported to receive copy sheets to be developed from feed rollers and has a removable insert cooperating to guide the sheets through developer in the tray and to take-off and squeeze rollers. The guide insert also limits the volume of toner in the tray, improves circulation thereof and reduces the toner surface exposed to evaporation. Cooperating with the insert guide structure are means for positioning and retaining the tray properly oriented with respect to the rollers but enabling ready sliding of the support for the tray assembly into and out of position in a photocopy machine.

3,729,256

ASSEMBLY FOR POLYMERIC DISPENSING

Wayne L. Westfall, Silver Spring; David L. Kramm, Laurel, and Moises G. Sanchez, Severna Park, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed Jan. 18, 1971, Ser. No. 107,043
Int. Cl. G03b *27/00*
U.S. Cl. 355—18 **3 Claims**



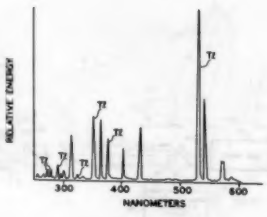
The invention disclosed is for an assembly useful for storing and dispensing a liquid photocurable composition. The assembly for storing and dispensing includes a storage chamber for a liquid photocurable composition which is in flow communication with a dispense chamber having a reciprocably slidable piston therein for effecting volume displacement and dispensing of the liquid composition. The piston selectively effects transfer of liquid composition from the storage chamber into the dispense chamber and, upon reverse actuation, it selectively effects dispensing onto a support surface. The photocurable composition may be thus dispensed onto the support surface, after which it is spread into a layer for exposure to actinic light in selective photocuring.

3,729,257

MEANS AND METHODS FOR EXPOSING PHOTOELECTROSTATIC MATERIALS

Robert L. Gunto, and Merton R. Staley, both of Palatine, Ill., assignors to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Division of Ser. No. 653,090, July 13, 1967, abandoned. This application Feb. 16, 1970, Ser. No. 14,851
Int. Cl. G03b *27/54*
U.S. Cl. 355—67 **4 Claims**

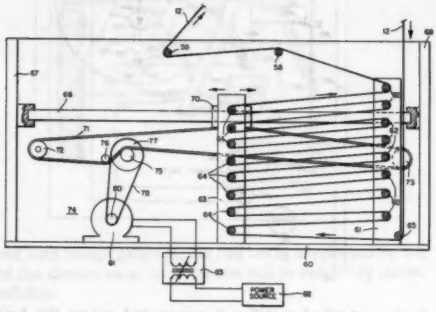


Exposure of the conventional dye sensitized zinc oxide resin binder copy material is accomplished with a radiation source that emits a high level of energy at 535 nanometers. The photoelectrostatic copying method involves illuminating the original to be reproduced with a mercury-vapor type lamp which has been modified to include thallium vapors through the introduction of thallium halide into the lamp envelope. A high intensity green light is emitted which performs as a monochromatic energy source and finds particular application when reproducing originals having more than one color indicia thereon so that all colors are reproduced in accordance with their relative brightness on the original.

3,729,258
EXTENSIBLE ROLL TREE FOR FESTOONED SHEET MATERIAL

Paul E. Kitch, West Springfield, Mass., assignor to Scott Paper Company, Delaware County, Pa.

Filed April 26, 1971, Ser. No. 137,314
Int. Cl. G03b 27/12
U.S. Cl. 355—109 **6 Claims**

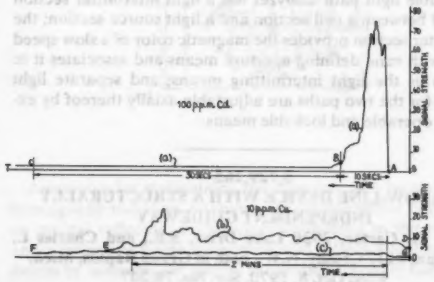


An extensible roll tree for use in apparatus in which continuous sheet material is continually cycled through an operational point from a storage area in which variable lengths of the sheet material are accumulated. The roll tree has two sets of rotatably mounted rolls about which the sheet material is entrained in a manner creating a plurality of stretches of the sheet material between the two sets of rolls. One of the sets of rolls is supported on a movable carriage which is reciprocally movable toward and away from the other set of rolls. A drive motor and a belt are connected to the movable carriage for moving it toward and away from the other set of rolls. This roll tree permits the plurality of stretches of the sheet material between the two sets of rolls to be increased or decreased as desired to accommodate greater or lesser lengths of sheet material in the accumulation area.

3,729,259
METHOD AND APPARATUS FOR MAKING SPECTROMETRIC MEASUREMENTS OF A CONSTITUENT OF A TEST SAMPLE

Brian Sydney Cooper; John Edward Cronk, and Derek John Hobbs, all of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Feb. 25, 1971, Ser. No. 118,925
Claims priority, application Great Britain, March 2, 1970, 9,970/70
Int. Cl. G01j 3/36, 3/30
U.S. Cl. 356—82 **8 Claims**

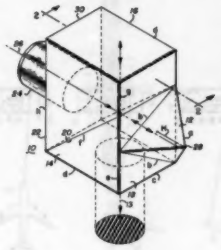


This specification describes a method of carrying out spectrometric measurements of a constituent of a sample, for example a constituent of an alloy in which the intensity of spectral light in one or more wavelength bands is recorded and at least one of the bands includes the spectral light due to the constituent to be investigated. The sample is subjected to volatilization and the record of the intensity is continued until and for at least a short time interval after at least a major part of the constituent has been volatilized from the sample.

3,729,260
INTERFEROMETRIC ROTATION SENSOR

Thomas M. Walsh, Cupertino, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed June 21, 1971, Ser. No. 154,933
Int. Cl. G01b 9/02
U.S. Cl. 356—110 **4 Claims**

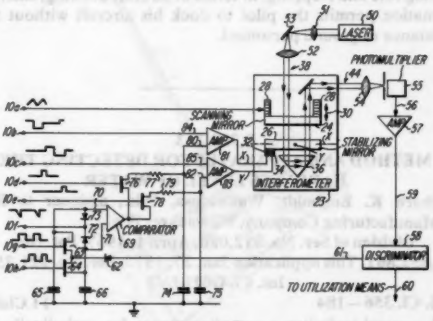


An interferometric rotation sensor and control system is provided which includes a compound prism interferometer and an associated direction control system. Light entering the interferometer is split into two paths with the light in the respective paths being reflected an unequal number of times and then being recombined at an exit aperture in phase differing relationship. Incoming light deviating from the optical axis of the device by an angle α causes a similar displacement of the two component images at the exit aperture with the result being that a fringe pattern is developed with the number of fringes being directly related to the angle α. Various control systems incorporating the interferometer are also disclosed.

3,729,261
STABILIZED MULTIPASS INTERFEROMETER

John Riddle Sandercock, Affoltern, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed June 21, 1971, Ser. No. 154,719
Int. Cl. G01b 9/02; H01s 3/00
U.S. Cl. 356—112 **18 Claims**



A Fabry-Perot interferometer is multipassed to provide improved contrast for Brillouin spectra measurements, the interferometer being provided with a stabilization system which

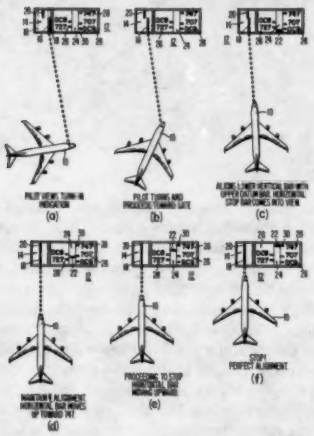
compensates for both thermal and mechanical drift of the interferometer mirrors with respect to each other. While the instrument is scanning the frequency spectrum of the multi-passed beam of incident wave energy, each pass being displaced with respect to the next adjacent pass, the stabilization system maintains the mirrors within the required degree of parallelism.

3,729,262

OPTICAL LENS DOCKING SYSTEM

Edwin E. Snead, Yeadon, Pa., and Jay B. Pitkow, West Chester, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed July 20, 1971, Ser. No. 164,350
Int. Cl. G01b *11/26*
U.S. Cl. 356—153 **20 Claims**



A system is described which provides a visual display for the accurate guidance and docking of aircraft after landing. The display is also suitable for the visual alignment and guidance of other vehicles to a desired parking position. The system employs a combination of lenses and light sources arranged to create for the observer, information for center line steering, closing rate and stopping. In terms of aircraft docking, such information permits the pilot to dock his aircraft without the assistance of ground personnel.

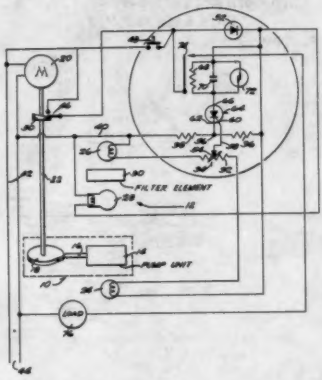
3,729,263

METHOD AND APPARATUS FOR DETECTING THE HARDNESS LEVEL OF WATER

Richard K. Engholdt, Wauwatosa, Wis., assignor to Erie Manufacturing Company, Milwaukee, Wis.,

Division of Ser. No. 812,086, April 1, 1967, Pat. No. 3,652,861. This application Jan. 27, 1972, Ser. No. 221,259
Int. Cl. G01j *3/48*
U.S. Cl. 356—184 **11 Claims**

A control including a sampling means for periodically extracting a sample of water from a water system and a detection means for determining the hardness level of the sample. The sample is mixed with a reagent adapted to cause the sample to change color at a predetermined hardness level. The color of the sample is compared with that of a filter element by means of a pair of photo-conductive cells connected in series in one leg of a bridge circuit. A difference in color between the sample and filter element indicating a hardness level above a given level will cause the bridge circuit to become unbalanced. A silicon controlled rectifier is connected across the bridge and will fire when the bridge becomes unbalanced causing a relay to be energized and thus provide power to initiate the regeneration cycle of a water softener apparatus.

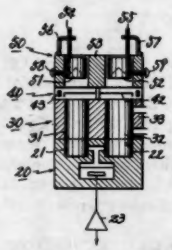


3,729,264

ANALYZER USING THE ROTOR OF A MOTOR AS A LIGHT CHOPPER

Tosio Simazaki; Haruo Kotani, and Kozo Isida, all of Minami-ku, Kyoto-shi, Kyoto-fu, Japan, assignors to Horiba Ltd., Kyoto-fu, Japan

Filed Aug. 9, 1971, Ser. No. 170,097
Int. Cl. G01n *21/22*; G01d *5/36*; G02f *1/30*
U.S. Cl. 356—206 **4 Claims**



A double light path analyzer has a light intermitter section installed between a cell section and a light source section; the intermitter section provides the magnetic rotor of a slow speed motor with vane defining aperture means and associates it to act also as the light intermitting means; and separate light sources for the two paths are adjustable axially thereof by externally operable and lockable means.

3,729,265

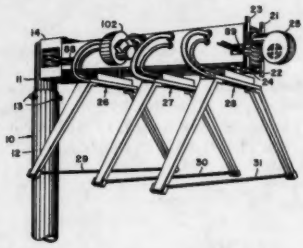
SHADOW-LINE DEVICE WITH A STRUCTURALLY INDEPENDENT GUIDEWAY

Andrew G. Carter, 2930 Lake Drive, S.E., and Charles L. Morgan, 1137 Crosby, N.W., both of Grand Rapids, Mich.

Filed Oct. 8, 1970, Ser. No. 79,207
Int. Cl. B27b *31/06*
U.S. Cl. 356—256 **5 Claims**

A device for projecting shadow lines on a work surface, at least certain of these lines being shiftable in response to con-

trol system, the movable projector assemblies being mounted on carries supported on a guideway formed by a relatively



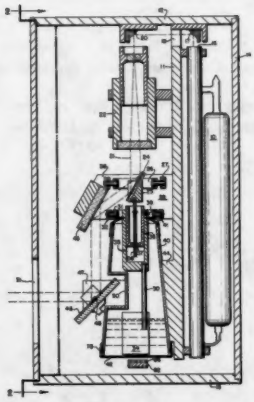
heavy rail with flange grooves, the rail being supported by the frame of the device so as to leave the rail in relatively stress-free condition.

3,729,266

APPARATUS FOR AUTOMATICALLY DIRECTING AND MAINTAINING A BEAM OF ELECTROMAGNETIC RADIATION RELATIVE TO EARTH HORIZONTAL

Mark T. Mason, South Lyndeboro, and Kenneth G. Wood, Walpole, both of N.H., assignors to Hamilton Kent Manufacturing Company, Kent, Ohio

Filed June 18, 1971, Ser. No. 154,434
Int. Cl. G01c *9/12, 9/16, 1/10*
U.S. Cl. 356—250 **13 Claims**



Apparatus for maintaining the direction of a beam of electromagnetic radiation relative to earth horizontal comprising an optical reflector, a pendulum connected to the reflector and a mounting frame supporting said reflector and said pendulum by independent gimbal suspension whereby said reflector moves responsive to pendulum motion through one-half the rotational angle of said pendulum, correcting an optical path in accordance with changes in the position of the pendulum relative to the mounting frame. Apparatus units utilizing coherent light beams are a specific embodiment.

3,729,267

MECHANICAL PENCIL

Jiro Hori, and Kazuhiro Nishiyama, both of Kure-shi, Japan, assignors to The Sailor Pen Co., Chuo-Ku, Tokyo, Japan

Filed July 20, 1971, Ser. No. 164,271
Claims priority, application Japan, May 11, 1971, 46/37591
Int. Cl. B43k *21/22*
U.S. Cl. 401—67 **15 Claims**

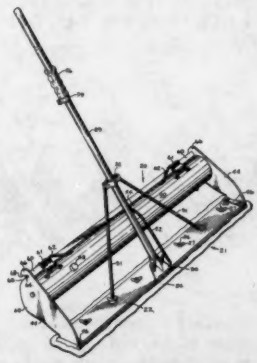
A mechanical pencil comprising a cartridge slidably inserted into the lower part of a barrel and containing a piece of pencil lead; a needle member for normally restricting the upward movement of said pencil lead; and a chuck for causing said cartridge to project from the lower end of the barrel upon depression of a push button mounted at the upper end of the barrel and for normally holding said needle member in position, whereby said cartridge and pencil lead may be jointly replaced when the latter is fully consumed.

3,729,268

FLOOR WAX DISPENSER

Jim E. Failing, 1302 16th Avenue, Greeley, Colo.

Filed Jan. 17, 1972, Ser. No. 218,181
Int. Cl. A47l *13/26;* **B67d** *5/64*
U.S. Cl. 401—137 **10 Claims**



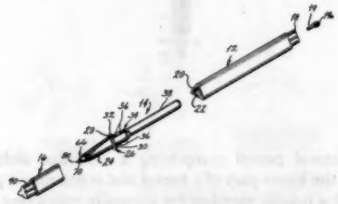
A floor wax dispenser is disclosed attachable to a wax applicator having a base and an upstanding handle. The dispenser is a tubular container mounted on brackets sup-

ported on the applicator base. An array of wax discharge ports is aligned on the container. A handle grip is provided connected to the container to rotate the container on the supports and position the discharge ports downwardly so that wax is discharged onto a floor surface. A spring return mechanism normally positions the container with the discharge ports upwardly, and a cover flap encloses the ports to prevent discharge of wax. Cam surfaces on the brackets engage cam pins on the cover both to hold the cover in place when the discharge ports are upwardly and to lock the tubular container to prevent further rotary movement. The cam pins on the cover coact with the brackets to open the cover flap automatically as the container is rotated into the wax discharge position.

3,729,269
PEN CASING

Harold E. Koeln, St. Louis County, Mo., assignor to Penn Corporation, Princeton, N.J.

Filed Aug. 28, 1970, Ser. No. 67,940
Int. Cl. B43k 7/00
U.S. Cl. 401—209 **11 Claims**



A pen casing includes an upper member, a middle member and a cap. The upper member has an elongated cavity of triangular cross-section extending therethrough and the middle member has a neck portion adapted to press-fit within the cavity of the upper member. The neck portion has a triangular cross-sectional shape which conforms to the shape of the cavity and includes at least one protrusion extending outwardly from its surface. The protrusion is adapted to press tightly against the inner surface of the cavity to provide a tight press-fit of the middle member within the cavity. The cap is adapted to slidably fit over the lower end of the middle member.

3,729,270
WRITING NIB

Kan Nakano, Tondabayashi, Japan, assignor to Tsukasa Felt Shoji Kabushiki Kaisha, Tokyo, Japan

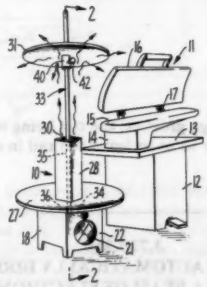
Filed Dec. 28, 1970, Ser. No. 101,905
Int. Cl. A46b 11/00; B43k 1/02
U.S. Cl. 401—292 **4 Claims**

Flexible nib for writing instrument includes core comprising flexible sheet having planar surface and opposite sawtooth surface formed by individual longitudinally extending triangular segments integrally connected together at their bases in side-by-side fashion. Longitudinally extending notches are located in sides of triangular segments, and longitudinally extending flat portions are located at apex of each triangular segment on each side of each segment. Flexible sheet may be formed into cylinder with planar surface thereof on outside and longitudinally extending flat portions of adjacent triangular segments engaging one another. Notches cooperate with notches of adjacent triangular segments to form longitudinal passageways when flexible sheet is formed into cylinder.

3,729,271
VENTILATING APPARATUS

Giacomo M. Bonaldi, 3655 Noriega St., San Francisco, Calif.

Continuation-in-part of Ser. No. 89,576, Nov. 16, 1970, abandoned. This application Aug. 9, 1971, Ser. No. 170,142
Int. Cl. F01d 15/00; D06f 61/00
U.S. Cl. 415—148 **1 Claim**

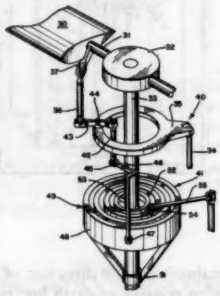


A ventilating device especially adapted for use in combination with commercial garment pressing machines comprising an air blower positioned near a source of cool air, a vertically-extending conduit attached to the exhaust of the air blower and having an open, upper end for directing the stream of exhaust air from the blower upwardly and a stationary deflector positioned at a predetermined height above the open end of the conduit for deflecting the stream of air substantially horizontally in all directions in the horizontal.

3,729,272
REVERSE VELOCITY ROTOR AND ROTORCRAFT

Harold E. Lemont, Calabasas, Calif., assignor to Fairchild Industries, Inc., Germantown, Md.

Division of Ser. No. 700,469, Jan. 25, 1968, Pat. No. 3,554,662. This application Oct. 30, 1970, Ser. No. 85,717
Int. Cl. B64c 27/74
U.S. Cl. 416—114 **7 Claims**



A rotary wing aircraft and rotor control system for such aircraft, which uses the reverse velocity airflow produced by high airspeeds of the aircraft across the retreating blade to generate positive lift on the retreating blade. Blade pitch control means and method for such aircraft providing a two/revolution, cam or higher order cyclic pitch input to generate more uniform lift in the advancing and retreating blade sectors of rotor mo-

tion. A main rotor for such aircraft having a new airfoil shape adapted to more efficiently generate positive lift from the reverse velocity airflow, and also having slotted flaps or other auxiliary lift devices for increasing lift at low aircraft airspeeds. A twistably-mounted tail rotor for such aircraft adapted for counter-torque operation at low aircraft airspeeds and for forward propulsion at high airspeeds.

3,729,273

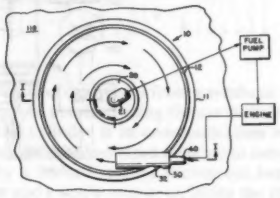
IN-TANK FUEL PUMP RESERVOIR

Yoram Shimrony, Elmira, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1970, Ser. No. 91,733

Int. Cl. F04b *23/04*; F04f *5/46*; B01d *19/02*

U.S. Cl. 417—79 **2 Claims**



A fuel reservoir arranged about the intake or suction conduit of a fuel pump supply line in a fuel tank utilized by internal combustion engines, consisting of a cylindrical container having a bottom and open top and to which a venturi nozzle is mounted. The venturi receives the return fuel and injects it into the reservoir. The auxiliary fuel is provided through an inlet opening at the throat of the venturi. The return flow of excess fuel delivered by said fuel pump creates a low pressure zone at the throat of the venturi thereby sucking the auxiliary fuel into the venturi causing both auxiliary fuel and return fuel to be injected into the reservoir in a vortical motion about said suction conduit.

3,729,274

INJECTION PUMP WITH REGULATION OF INJECTION TIMING

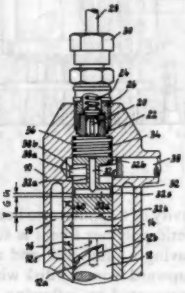
Ernst Hatz, Rufstrof, and Erwin Samitz, Bad Fussing, both of Germany, assignors to Motorenfabrik Hatz KG, Ruhstort, Germany

Filed June 24, 1971, Ser. No. 156,315

Claims priority, application Germany, July 2, 1970, P 20 32 704.2

Int. Cl. F04b *35/02*

U.S. Cl. 417—387 **7 Claims**



In a fuel injection pump for internal combustion engines, a reciprocable piston injects fuel on each compression stroke. The cylinder in which the piston reciprocates has an overflow port which is controlled by at least one control edge of the piston so as to effect injection during the portion of the compression stroke when the overflow port is closed. The beginning and/or end of injection are variably regulated relative to the compression stroke by a setting member which varies the stroke of the piston relative to the overflow port, and hence the elapsed time between the beginning of the compression stroke and the beginning and/or end of the injection.

3,729,275

VACUUM CLEANER

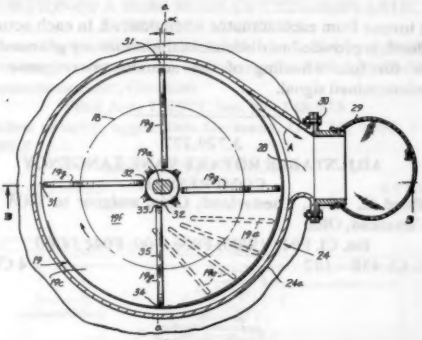
Dennis Leslie Furnell, Hemel Hempstead, England, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed March 12, 1971, Ser. No. 123,568

Claims priority, application Great Britain, March 26, 1970, 14,816/70

Int. Cl. F04b *35/04*

U.S. Cl. 417—424 **10 Claims**



A vacuum cleaner has a casing which is disposed about and envelops at least one end of an electric motor and a fan driven by the motor. The fan includes a disk having a first set of blades at one side, such blades projecting axially in a first direction from the motor toward an air inlet. The motor housing and casing define a space for flowing dust-laden air in a path of flow from the inlet at the one side of the disk to an outlet axially removed therefrom and at the other side of the disk. A gap is formed between the fan disk and the end of the motor housing adjacent to which the fan is located.

The blades of the first set at the air inlet effect flow of dust-laden air radially outward at the one side of the disk, and, after reaching its periphery, such air continues to flow axially toward the outlet. A second set of blades is provided at the other side of the disk, such blades projecting axially in a second opposite direction toward the motor. The blades of the second set function to maintain the gap between the disk and motor housing substantially free of dust accompanying air flowing through the space to the outlet from the periphery of the disk.

3,729,276

ACTUATOR ASSEMBLY

George I. Boyadjieff, Woodland Hills, Calif., and Kenneth W. Verge, Farmington, Mich., assignors to The Bendix Corporation, Southfield, Mich.

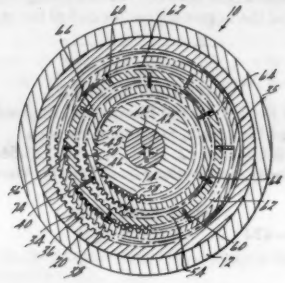
Filed July 6, 1971, Ser. No. 159,900

Int. Cl. F01c *1/42*

U.S. Cl. 418—59 **5 Claims**

An actuator assembly consisting of a plurality of actuators arranged in series and connected to a common output shaft for multiplying the torque available from the shaft wherein a selectively operable clutch is provided for each of the assemblies that is capable of disconnecting the assembly from the output shaft when desired. Each actuator includes a pair of floating ring gears mounted for epicyclic movement relative to

a stationary gear and an output gear, and a summing gear disposed between the ring gears so that the combined movements of the ring gears are summed to obtain the desired movement of the output gear, thereby enabling increased output torque from each actuator when desired. In each actuator, a clutch is provided to disconnect the stationary gear and provide for free wheeling of the actuator in response to a predetermined signal.



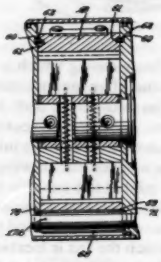
3,729,277

ADJUSTABLE ROTARY VANE TANGENCY COMPRESSOR

Clifford H. Allen, Chesterland, Ohio, assignor to TRW Inc., Cleveland, Ohio

Int. Cl. F01c *19/00*; F03c *3/00*; F04c *14/00*

U.S. Cl. 418—107 **4 Claims**



A compressor having a closed-ended cylindrical compression chamber with an eccentrically positioned vane carrying rotor received therein and supported by end plates closing the cylinder, wherein the said end plates are pivotably attached to the cylinder by means of pivot pins allowing adjustment of the radial positioning of the rotor within the cylinder to establish zero clearance at the point of tangency after assembly and prior to final tightening, while maintaining the actual contact between the rotor and cylinder at the desired line of tangency and a locking means whereby the initial positioning of the rotor relative to the cylinder is assured against change during the operating life of the compressor.

3,729,278

APPARATUS FOR PRODUCING MICROSPHERES

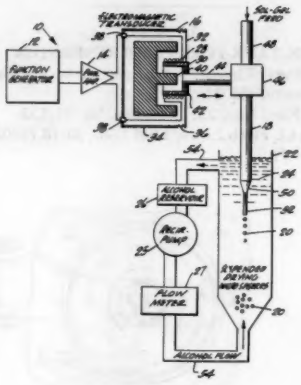
Wayne M. Lysher, Richland, Wash., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Dec. 17, 1970, Ser. No. 98,975

Int. Cl. B22d *23/08*

U.S. Cl. 425—210 **2 Claims**

Apparatus for producing microspheres including a vertically mounted sol-gel feed tube having a lower microsphere formation needle immersed in an alcohol drying column, variable pump means for feeding sol-gel at a predetermined rate into the upper end of the feed tube, and drive means for vibrating the feed tube in a generally horizontal direction at a predetermined amplitude and frequency to produce microspheres from the formation needle of a uniform and predetermined size. An electromagnetic transducer drive for vibrating the feed tube is used in one illustrative embodiment of the invention, and an electric motor offset drive is used in another illustrative embodiment thereof. A feed tube having multiple microsphere formation needles at its lower end can be used for producing microspheres in quantity.



3,729,279

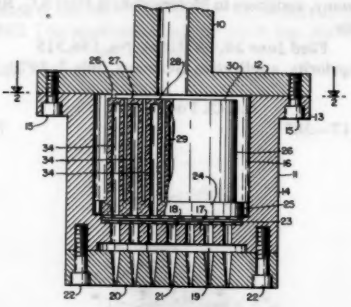
SPINNERETTE WITH HEAD FILTER

Lambert H. Mott, c/o Mott Metallurgical Corp., P. O. Drawer L, Farmington Industrial Park, Farmington, Conn.

Filed June 24, 1971, Ser. No. 156,424

Int. Cl. D01d *3/00*; D29f *3/00*

U.S. Cl. 425—198 **4 Claims**



The central cavity of a spinnerette head assembly for the extrusion of synthetic polymer fibers is substantially filled by a filter element having a filter disk and upstanding concentric rings extending upward from the disk within the central cavity, the filter area presented to inflowing plastic being at least twice the cross-sectional area of the cavity and the concentric rings occupying at least 45 per cent of the volume of the cavity, the filter element containing concentric circles of closely spaced upward outflow bores extending through the filter disk to the upper portions of the concentric rings.

3,729,280

INJECTION MOLDING UNIT

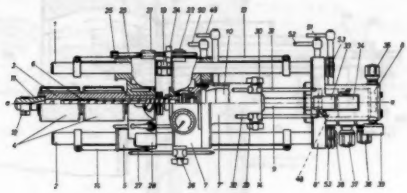
Karl Hehl, Siedlung 183, 729, Loosburg/Wurtt, Germany

Filed Dec. 2, 1970, Ser. No. 94,431

Claims priority, application Germany, Dec. 10, 1969, P 19 61 819.0; Feb. 17, 1970, P 20 07 038.6; April 25, 1970, P 20 20 337.6

Int. Cl. B29f 1/06

U.S. Cl. 425—251 10 Claims



A method for producing cast pieces from a synthetic material comprises the steps of preplasticizing the synthetic material while the plasticizing cylinder is in communication with the mold cavity, relaxing the preplasticized material to remove the pressure thereon by a limited relative movement between a plasticizing cylinder and a screw conveyer, lifting the plasticizing cylinder away from the mold cavity and out of communication therewith, removing the previously cast piece from the mold cavity, and injecting the material in the plasticizing cylinder through the always open nozzle and into the mold cavity by a stroke of a screw conveyer toward the mold cavity. The apparatus for carrying out this method includes a plasticizing cylinder having a screw conveyer arranged therein. The cylinder and conveyer are mounted for movement relative to one another along the injection axis. Means including a guide member and an abutment are provided for permitting a limited relative movement between the cylinder and screw conveyer.

3,729,281

APPARATUS FOR COMPRESSION-MOLDING A POWDER WITHIN CONTAINERS

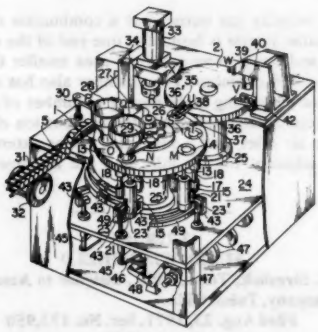
Kei Okubo, Neyagawa-shi; Toru Horiguchi, Kadoma-shi; Miyoji Nakai, Neyagawa-shi, and Haruhisa Shimada, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 10, 1969, Ser. No. 883,799

Claims priority, application Japan, Dec. 13, 1968, 43/91862

Int. Cl. B29c 1/14, 3/04, 6/00

U.S. Cl. 425—361 5 Claims



A plurality of dies are mounted on an intermittently rotating table in circumferentially equally spaced relation and below each die is provided a powder molding mechanism comprising a vertically movable molding tube extending into said die at its top end and a vertically movable center pin extending through said molding tube with the top end thereof located within said die. Each die is charged with a powder at one station and shifted to another station upon the intermittent rotation of said table where a cylindrical container with a bottom is placed in the die with the open end thereof facing downward, and then further shifted to still another station where the powder charged in the die is moved into the container and compression-molded therein by said molding mechanism, whereby the steps of charging the powder into the die, moving the powder into the container and compression-molding the powder within said container are carried out successively during one complete rotation of said table, and hence operation efficiency can be enhanced and the apparatus is highly adapted to mass production.

3,729,282

APPARATUS FOR RADIALLY EXPANDING THE END PORTION OF A TUBE MODE OF THERMOPLASTIC SYNTHETIC MATERIAL

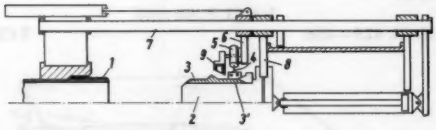
Hermann Herter, Krefeld, and Adolf Scherf, Duisburg, both of Germany, assignors to Mannesmann Aktiengesellschaft, Mannesmannufer, Germany

Filed June 1, 1971, Ser. No. 148,973

Claims priority, application Germany, Oct. 24, 1968, P 18 05 597.5

Int. Cl. B29c 17/00, 23/00

U.S. Cl. 425—393 4 Claims



Means for radially expanding the end portion of a tube made of thermoplastic synthetic material provides for a mandrel having a cylindrical sheath which is longitudinally divided into a plurality of sections. Each sections is at the outer end thereof connected through a radial rod with a radial drive. The sections are collapsible inwardly towards the longitudinal axis of the tube portion. In the collapsed position the sheath sections together with the rods and drive are moved towards the tube end. By radially moving the segments into a closed position, the tube end is shaped to the desired configuration.

3,729,283

CLOSING, LOCKING AND PRESTRESSING DEVICE FOR CASTING MOLDS

Ulrich Eggenberger, Bichwilerstrasse, Oberuzwil, and Heinz Nef, Dammweg, Uzwil, both of Switzerland

Filed March 22, 1971, Ser. No. 126,567

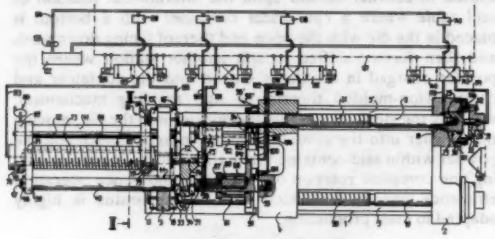
Claims priority, application Switzerland, March 20, 1970, 4230/70

Int. Cl. B29c 1/16, 3/02, 5/00

U.S. Cl. 425—450 9 Claims

The device is usable for casting molds, particularly for injection and pressure molding, of the type having a fixed mold part carrier, a supporting part having a shifting device attached thereto, at least two guides extending from the fixed carrier to the supporting part, a mold part carrier movable by the shifting device along the guides and anchorable thereon, and a hydraulic prestressing device acting through the guides upon the two mold part carriers. Two guide bars extend parallel to the shifting device through the supporting part in guided relation therein, and are connected to the movable mold part carrier. At least one stop plate is movable on the shifting device and is connected to the two guide bars, and two mechanical stops provided on opposite sides of the stop plate are coopera-

ble therewith. Each guide bar is provided, between the supporting part and the movable mold part carrier, with a piston and also supports a movable cylinder enclosing the piston. Each cylinder is connected to an ejector plate, and cavities on



opposite sides of the piston, inside the associated cylinder, are controllably chareable hydraulically. The guides, adjacent that surface of the fixed mold part carrier away from the casing mold, provided prestressing pistons each movable in a cylinder on the fixed mold part carrier.

3,729,284

JOLTING TABLES

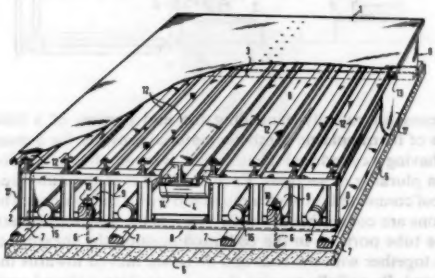
Georg Hubmann, Harlachinger Strasse 17, Munich 90, Germany

Filed Jan. 28, 1971, Ser. No. 110,578

Claims priority, application Germany, Feb. 2, 1970, D 20 04 607.5

Int. Cl. B28b *1/08*

U.S. Cl. 425—456 **7 Claims**



This invention relates to jolting tables for manufacturing structural members from concrete. Such tables normally comprise a vibratory plate on a support structure which is used as a mould base for the member and a jolter is mounted below this plate. In accordance with the invention, the support structure is rigid and the plate is freely mounted thereon without resilient cushioning in such a fashion that it may be laterally displaceable within predetermined limits: the jolter is movable along a jolting rail that extends substantially over the whole length of the plate, said rail being secured directly to the inside of the plate. The support structure is rigidly connected to a base member which may be a prepared slab of concrete or the ground. The support framework may be made from steel or wooden members.

3,729,285

BURNER AND METHOD OF OPERATING IT TO CONTROL THE PRODUCTION OF NITROGEN OXIDES

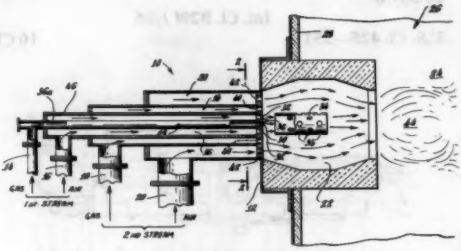
George H. Schwedersky, 276 Main Street, Westport, Conn.

Filed May 22, 1972, Ser. No. 255,532

Int. Cl. F23c *7/00*

U.S. Cl. 431—8 **5 Claims**

In the operation of a burner using gaseous fuel the production of nitrogen oxides is limited and controlled by providing successive stages of combustion and by holding down the temperature of combustion. This is accomplished by introducing the fuel in two streams of unequal volume and comprising respectively more and less than the stoichiometric percentage



of air, igniting the streams in sequence, thus effecting first and second stages of combustion, and mixing and consuming the excess fuel and air of said streams respectively, thus effecting a third stage of combustion.

3,729,286

HEATING FURNACE PROVIDED WITH HIGH VELOCITY GAS BURNERS

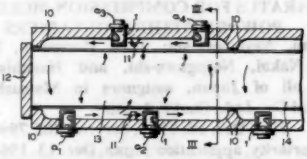
Hirofumi Iida, Chiba, and Kazufumi Watanabe, Yokohama, both of Japan, assignors to Tokyo Gas Company Limited, Tokyo, Japan

Filed June 9, 1971, Ser. No. 151,446

Claims priority, application Japan, July 10, 1970, 45/68998; Nov. 7, 1970, 45/110565; Dec. 26, 1970, 45/136407

Int. Cl. F23c *5/08*

U.S. Cl. 431—174 **7 Claims**



A high velocity gas burner has a combustion chamber. A tapered outlet nozzle is formed at one end of the combustion chamber and has a cross-sectional area smaller than that of the combustion chamber. The chamber also has an air inlet. An air flow equalizing plate having a number of air passage holes therein is disposed within the combustion chamber adjacent the air inlet, and a fuel inlet means extends into the chamber adjacent the air inlet and the air flow equalizing plate.

3,729,287

FLARE WINDSHIELD

Donald T. Strashok, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

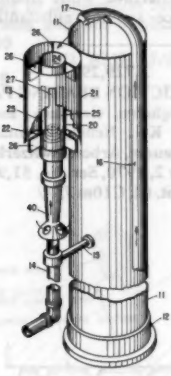
Filed Aug. 23, 1971, Ser. No. 173,950

Int. Cl. F23d

U.S. Cl. 431—202 **7 Claims**

A windshield for a gaseous fuel flare used for igniting combustible gases flowing from a flare stack makes use of two essentially concentric, slotted, thin-wall cylinders surrounding

the flare, with the slots staggered so impedance to high velocity air flow is high. As a result the flare is furnished



adequate secondary air, but essentially will not be blown out by wind.

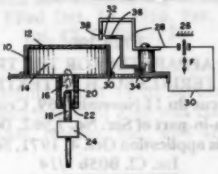
3,729,288

PIEZOELECTRICALLY IGNITED GAS BURNER WITH DUAL PURPOSE ELECTRODE

Don A. Berlincourt, Chagrin Falls, and David J. Horvath, Aurora, both of Ohio, assignors to Vernitron Corporation, Bedford, Ohio

Filed Jan. 28, 1971, Ser. No. 110,471
Int. Cl. F23q *3/00*
U.S. Cl. 431—264 **3 Claims**

A high capacity gas burner head. The gas emanating from the burner head is ignited by a piezoelectric ignition system which includes a strip-like hot electrode arranged above the burner to form a spark gap with either the burner head or a ground electrode. The hot electrode also provides a gas



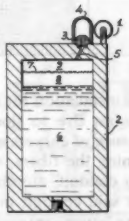
deflecting barrier causing the gas to flow into or towards the spark gap.

3,729,289

CIGARETTE LIGHTER

Daniel Bouvier, Paris, France, assignor to S. T. Dupont, Paris, France

Filed Jan. 5, 1971, Ser. No. 104,111
Claims priority, application France, Jan. 6, 1970, 7000300
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 **4 Claims**



A gas cigarette lighter having a burner nozzle, a manually operable closure cap associated with the burner nozzle and a reservoir for holding lighter fuel. Within the reservoir there is disposed wall means which divides the reservoir into at least one first part in which the fuel is stored in its liquid phase and a second part which communicates with the burner nozzle and which contains fuel in its gaseous phase to which said wall means is pervious.

ERRATUM

For Class 432—228 see:
Patent No. 3,729,180

3,729,290

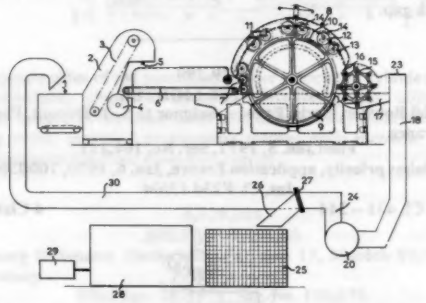
PROCESS AND APPARATUS FOR THE TREATMENT OF LOOSE MATERIALS SUCH AS TEXTILE FIBERS

Pierre Dillies, 10 rue du 11 Novembre 59, Croix, France

Continuation-in-part of Ser. No. 7,962, Dec. 31, 1968, abandoned. This application Oct. 4, 1971, Ser. No. 186,235

Int. Cl. B05b *7/14*

U.S. Cl. 8—149.2 **5 Claims**



This method and the installation for carrying out same are divised for applying a fast dye to floss fibers of all kinds, notably in the manufacture of carpets and blankets, and consists essentially in opening the fibers, sucking them through the rotor of a fan via a conduit, atomizing the dyeing liquor through an orifice into said conduit in close vicinity of said fan, the atomized dyeing liquor representing from five to fifty per cent by weight of the fibers, and finally exposing said fibers to a vaporization in order definitely to fix the dyestuff thereto.

3,729,291

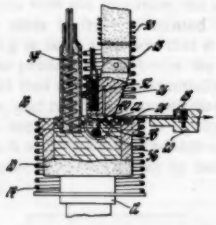
METHOD FOR GROWING CRYSTALS FROM MOLTEN MELTS SATURATED WITH CRYSTALLINE MATERIAL

Carl E. Bleil, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Original application Oct. 29, 1969, Ser. No. 872,042. Divided and this application Apr. 5, 1971, Ser. No. 131,278

Int. Cl. B01j *17/04, 17/18*

U.S. Cl. 23—301 SP **5 Claims**



An apparatus and method are disclosed for growing crystals from a melt of a molten solvent metal that is saturated with a solute. Heat is withdrawn through a seed contacting the surface of the melt to precipitate the solute onto said seed at the seed-melt interface. The seed is pulled away from the melt at a rate commensurate with the precipitation rates. Simultaneously, more solute is dissolved into the melt from a solute source in the melt beneath the growth interface while maintaining a close source-growth interface spacing substantially constant.

3,729,292

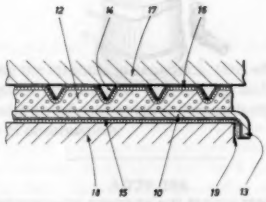
ANTI-FRICTION BEARING PAD

Friedrich Heck, Deilinghofen, Germany, assignor to Duria-Werk Karl Kempf KG, Neuss, Germany and Atkiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed July 2, 1970, Ser. No. 51,914

Int. Cl. C10m *7/00*

U.S. Cl. 29—182.3 **22 Claims**



An anti-friction bearing pad which is intended for use, for example, between the leaves of a leaf spring comprises a metal backing disc with a porous layer of sintered bronze or other metal applied to one surface. The porous sintered layer has, at least in its surface part a high proportion of a metal or metals which are more electro-positive than iron and the porous sintered layer is also impregnated with polytetrafluorethylene. The polytetrafluorethylene provides the necessary anti-friction properties and the content of metal which is more electro-positive than iron and which is in metal-to-metal contact with the metal of the porous sintered layer acts as a sacrificial anode in preventing corrosion of the spring leaves or other iron-containing parts with which the surface of the pad is, in use, in contact.

3,729,293

LEAD-BEARING STEEL AND METHOD OF MANUFACTURE

Gary Steven, Pittsburgh, Pa., assignor to Crucible Inc., Pittsburgh, Pa.

No Drawing. Original application Aug. 20, 1968, Ser. 753,900. Divided and this application Apr. 30, 1971, Ser. No. 131,812

Int. Cl. B22f *3/20*

U.S. Cl. 29—182.5 **4 Claims**

This invention relates to a tool-steel composition characterized by improved machinability by the addition of .5 to 2% lead in combination with sulfur in an amount up to about .3%. Articles characterized by improved machinability are produced in accordance with the present invention by providing a charge of powdered metal of a desired tool-steel composition, coating the particles with lead oxide, thereafter heating said charge under conditions of temperature and pressure to decompose said lead oxide by gassification and then removing the products of gassification from the powdered metal charge to leave the particles coated with lead. The lead-containing charge of particles is then compacted to form a dense compact.

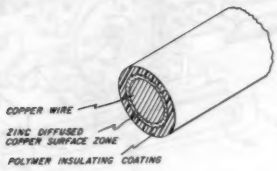
3,729,294
ZINC DIFFUSED COPPER

Louis E. Hibbs, Jr., Schenectady, N.Y., assignor to General Electric Company

Application Feb. 6, 1969, Ser. No. 797,201, now Patent No. 3,600,221, dated Aug. 17, 1971, which is a continuation-in-part of application Ser. No. 720,201, Apr. 10, 1968. Divided and this application Sept. 18, 1970, Ser. No. 73,590

Int. Cl. B32b *15/08*

U.S. Cl. 29—195 11 Claims



The surface of a copper body which may, for example, be a coating, foil or wire, is provided with a zinc coating. The zinc coating is diffused into the copper surface to form an alloy surface zone which protects and preserves the properties of materials such as polymers and carbon that ordinarily degrade when contacted with copper.

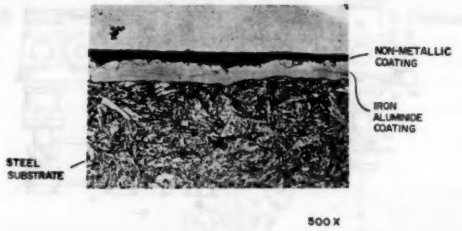
3,729,295
CORROSION RESISTANT COATING SYSTEM

Martin Weinstein, San Antonio, Kenneth K. Speirs, Universal City, and Robert B. Baer, San Antonio, Tex., assignors to Chromalloy American Corporation, New York, N.Y.

Filed May 17, 1971, Ser. No. 143,842

Int. Cl. B32b *15/18*

U.S. Cl. 29—195 5 Claims



Ferrous metal articles are provided having improved resistance to corrosion in highly saline and/or marine atmospheres, the articles being characterized by a protective duplex coating comprised of a sacrificial thermally aluminized ferrous metal surface in a combination with a special barrier type non-metallic overcoat. One method of providing the foregoing system is to apply an adherent layer from a liquid of a soluble silicate salt or compound onto a thermally aluminized layer, the silicate layer being preferably thereafter cured. In a preferred embodiment, a conversion coating is applied to the silicate layer and cured in situ to further enhance the resistance to corrosion.

3,729,296
POLYMERIC WAX CRYSTAL MODIFIERS FOR HIGH WAX CONTENT PETROLEUM OILS

Harold N. Miller, Plainfield, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Oct. 14, 1966, Ser. No. 586,654

Int. Cl. C10m *1/26*

U.S. Cl. 44—62 14 Claims

Oil-soluble polymers of unsaturated esters having alkyl side chains containing about 18 to 34 carbon atoms improve flow and pour points of high wax content petroleum oils such as crudes, residua, etc., and are useful as dewaxing aids.

3,729,297
APPARATUS FOR CONTINUOUSLY DECOMPOSING HYDROCARBON IN A HEATING MEDIUM BATH

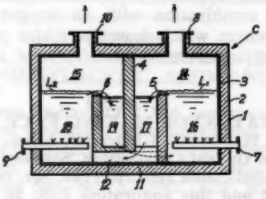
Fujio Yoshida and Kagesumi Akamatsu, Okayama, and Nobito Hara, Yamaguchi, Japan, assignors to Mitsui Shipbuilding and Engineering Co. Ltd., and Mitsui Petrochemical Industries Limited, both of Tokyo, Japan

Filed Nov. 25, 1970, Ser. No. 92,662

Claims priority, application Japan, Nov. 29, 1969, 44/95,471

Int. Cl. C01b *2/28*

U.S. Cl. 48—92 2 Claims



Apparatus for continuously decomposing hydrocarbon gases in a heated bath in which the apparatus is divided into a heating chamber and a decomposing chamber respectively. The liquid medium of the bath is heated in the heating chamber by blowing combustion gas into the bath. The cooled gas is separated at the top of the heating chamber and the heated medium is caused to overflow and is directed to the bottom of the decomposition chamber. The hydrocarbon is introduced into the liquid in the decomposition chamber and is discharged at the top of the chamber and the liquid medium is caused to overflow into a passageway opening into the bottom of the heating chamber so that the liquid heating medium is caused to circulate continuously from the heating chamber through the decomposition chamber and back to the heating chamber without permitting co-mingling of the combustion gases used for heating the medium and the hydrocarbon which is decomposed in the decomposition chamber.

3,729,298
SOLID REFUSE DISPOSAL PROCESS AND APPARATUS

John Erling Anderson, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

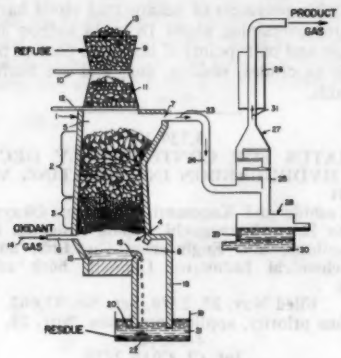
Filed July 9, 1971, Ser. No. 161,107

Int. Cl. C10j *3/00, 3/20*

U.S. Cl. 48—111 25 Claims

A process for disposing of refuse by thermally decomposing it in a shaft furnace and simultaneously producing a fuel or synthesis gas containing over 50% CO and H_2. A gas containing at least 40% oxygen is fed into the furnace at a rate of 0.15–0.28 ton of O_2 per ton of

refuse to create a sufficiently high thermal driving force in the hearth to melt and fluidize the non-combustible inorganic matter and to permit molten metal and slag to be tapped from the base of the furnace without causing over oxidation of the refuse. The metal and slag will solidify to an inert compact residue. The relatively small



volume of gas produced from the combustible organic portion of the refuse renders it easy to clean of pollutants prior to further treatment or utilization. The process may be used in combination with an oxygen plant in an integrated system which leaves a major portion of the gas produced available for use.

3,729,299

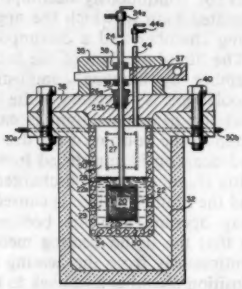
APPARATUS FOR MAKING FACE PLATES

Frederick H. Norton, Gloucester, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Original application Jan. 20, 1969, Ser. No. 835,113. Divided and this application Feb. 26, 1971, Ser. No. 119,342

Int. Cl. C03b *23/14, 25/00*

U.S. Cl. 65—12 **2 Claims**



Method and apparatus for making fused image-conducting fiber optic face plates and the like which are impervious to gases and free from gas inclusions and such therein.

3,729,300

CENTERLESS GRINDER

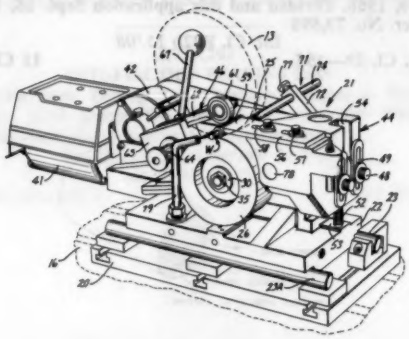
John A. Mackay, Warren, and John A. Doran, III, Hartland, both of Mich., assignors to Unison Corporation, Madison Heights, Mich.

Filed Nov. 9, 1970, Ser. No. 87,779

Int. Cl. B24b *5/18*

U.S. Cl. 51—103 R **10 Claims**

A fixture for converting a surface grinder or any machine having a grinding wheel and a support below said grinding wheel into a centerless grinder, said fixture including rotatably supported shaft means and a regulating roller mounted thereon for rotation therewith near the grinding wheel. The roller will usually rotate around an axis substantially parallel with the axis of rotation of the grinding wheel, but said roller



axis may be transverse of the wheel axis. Guide means on said fixture position a workpiece between the grinding wheel and regulating roller for rotation and grinding thereby. Drive means are connected to the grinding wheel and the shaft means for effecting rotation thereof.

3,729,301

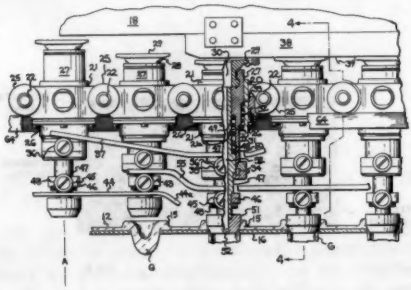
METHOD OF SHAPING GLASS

Richard A. Heaton, and Maurice J. Sachs, both of Maumee, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 856,289, Sept. 9, 1969, Pat. No. 3,647,410. This application July 12, 1971, Ser. No. 161,526 Ser. No. 161,526

Int. Cl. C03b *9/14*

U.S. Cl. 65—81 **2 Claims**



The invention relates to the method of operation of a blow head mechanism on a glass ribbon type forming machine. The blow head includes a blow pipe and the movements and manipulations thereof are positively controlled by cammed movements of (1) the blow shoe onto and away from the air manifold, and (2) the blow pipe into and out of engagement with the underlying glass ribbon carried on an orifice plate conveyor. The positive control of both axially movable members of the chain-like series of blow heads on the machine enables reliable repeatibility of the blowing cycle in making successive articles from the glass ribbon, thereby improving quality of the glassware produced.

3,729,302

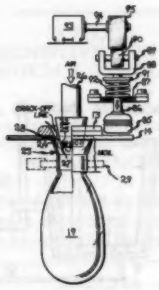
REMOVAL OF GLASS ARTICLE FROM RIBBON FORMING MACHINE BY VIBRATING FORCE

Richard A. Heaton, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 245, Jan. 2, 1970, Pat. No. 3,642,461. This application July 12, 1971, Ser. No. 161,519

Int. Cl. C03b *21/00*

U.S. Cl. 65—105 4 Claims



The invention pertains to ribbon machine manufacture of glass articles. The invention includes novel vibration crack-off technique on the ribbon machine. As the article is severed, it drops by gravity a short distance onto individual transfer tongs traveling with the ribbon and just previous to crack-off is inserted around the article neck region. Upon severance, the articles are individually delivered in succession by the tongs to a further processing machine unit, such as a burn-off machine. Simultaneously with crack-off, a pressurized nozzle directs a flow of air under pressure from within the neck region of the article in an upwardly direction and through the mouth region of the article. Any glass chips or particles therein are expelled by the pressurized air flow.

3,729,303

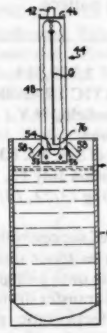
APPARATUS FOR LIQUID QUENCHING GLASS SHEETS

Joseph V. Hornyak, Lower Burrell, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 10, 1971, Ser. No. 197,430

Int. Cl. C03b *27/00*

U.S. Cl. 65—348 9 Claims



Improved apparatus for thermally tempering glass sheets by liquid quenching comprising means adjacent a marginal edge of a glass sheet that permits unencumbered marginal edge heating in a furnace and temporarily retards the rate of cooling of at least a portion of the marginal edge when the sheet reaches the plane of the surface of the quenching liquid. This apparatus causes the body of the glass sheet between marginal edges to cool initially at a rate equal to or preferably greater than the rate at which the edges are cooled. This minimizes the tensile stresses that are temporarily established in the edge permitted to cool at an unregulated rate during liquid quenching, which tensile stresses have been associated with glass breakage during liquid quenching.

3,729,304

PROCESS FOR THE PREPARATION OF OXIMES

Jan Elmendorp, Brunssum, and Abraham H. De Rooij, Geleen, both of Netherlands, assignors to Stamicarbon, N.V., Heerlen, Netherlands

Filed June 15, 1971, Ser. No. 153,187

Claims priority, application Netherlands, June 17, 1970, 7008838

Int. Cl. C05b *11/04*

U.S. Cl. 71—34 4 Claims

A process for synthesizing an oxime by reacting an organic carbonyl compound with a hydroxylammonium sulfate and ammonium hydrogen sulfate in the presence of ammonium dihydrogen phosphate whereby an aqueous solution of phosphoric acid and ammonium sulfate is obtained after separating the oxime product therefrom. The phosphoric acid, ammonium sulfate solution can be used in processing rock phosphate with the aid of nitric acid to product a fertilizer composition having a N to P_2O_5 ratio of approximately 1:1.

3,729,305

HERBICIDAL METHOD EMPLOYING TRIFLUOROMETHYLPHENYLACETIC ACID AND AMIDES THEREOF

Wilbur J. Doran, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 756,366, Aug. 30, 1968, which is a continuation-in-part of application Ser. No. 531,041, Mar. 2, 1966, both now abandoned. This application Nov. 14, 1969, Ser. No. 877,005

Int. Cl. A01n *9/20*

U.S. Cl. 71—115 6 Claims

A method and compositions for eliminating germinating weed grasses and broadleaf weeds in which a trifluoromethylphenylacetic acid or an amide thereof is the herbicidally active ingredient, particularly useful in corn fields.

3,729,306

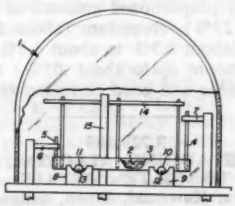
PURIFICATION OF RARE-EARTH METALS

Thomas A. Henrie and James Eugene Murphy, Reno, Nev., assignors to the United States of America as represented by the Secretary of the Interior

Filed Apr. 28, 1969, Ser. No. 819,830

Int. Cl. B01j *17/10*; C22d *7/04, 9/00*

U.S. Cl. 75—10 4 Claims



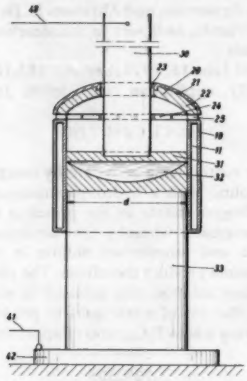
Rare-earth metals are purified and alloys are separated into component metals by electrical field freezing under conditions providing a small thermal gradient and a temperature of the liquid portion of the specimen near the melting point of the metal.

3,729,307

METHOD AND APPARATUS FOR ELECTROSLAG REMELTING OF METALS, PARTICULARLY STEEL

Rudolf Plessing, Kapfenberg, Austria, assignor to Gerb. Bohler & Co., Kapfenberg, Austria

Filed July 20, 1970, Ser. No. 56,434
Claims priority, application Austria, July 21, 1969, A 6,965/69
Int. Cl. C22d *7/08;* C21c *5/52;* H05b *7/18*
U.S. Cl. 75—10 8 Claims



A process of and an apparatus for electroslag remelting of metals, particularly of steel, in a liquid-cooled mold in which a consumable electrode is melted. The liquid-cooled mold is provided with a lid or cover, which at least in the inner portion thereof overlying the liquid material in the mold is provided with a lining of refractory material, the cover being spaced somewhat above the mold, and having a central opening through which the electrode passes into the mold. Air drawn in through the space between the cover and the mold passes out through the central opening, whereby to cool the refractory lining of the cover.

3,729,308

IRON NICKEL CHROMIUM ALLOYS

Herbert L. Eiselstein and James C. Hosier, Huntington, W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Filed July 21, 1970, Ser. No. 56,977
Int. Cl. C22c *39/20*
U.S. Cl. 75—128 E 10 Claims

Iron-base alloys for sheathing electric heater elements include specially proportioned amounts of nickel (about 15% to about 23%), chromium (about 17% to about 23%), silicon (about 0.3% to about 1.5%) and cerium (an effective amount up to about .05%) to assure high oxidation resistance and good corrosion resistance.

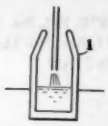
3,729,309

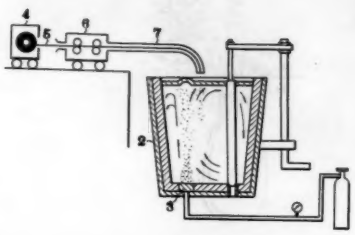
METHOD FOR ADDING ALLOYING ELEMENTS TO MOLTEN METALS

Takaho Kawawa, Kawasaki, Japan, assignor to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1970, Ser. No. 15,339
Claims priority, application Japan, Feb. 7, 1969, 44/17,041
Int. Cl. C22c *1/06, 33/00*
U.S. Cl. 75—129 7 Claims

A method for adding alloying elements such as aluminium, titanium to molten metals, said elements being capable of reacting with the atmosphere surrounding the metals, comprising inserting a wire rod made of the element into a molten metal bath at a controlled speed,





said rod having a controlled size, so as to produce a refined and purified metal alloy.

3,729,310

SURFACE DEFORMABLE IMAGING PROCESS AND MEMBER

Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 670,824, Sept. 15, 1967, which is a continuation-in-part of applications Ser. No. 388,322 and Ser. No. 388,323, both Aug. 7, 1964, all now abandoned. This application Nov. 30, 1970, Ser. No. 93,837
Int. Cl. B41m *5/20;* G03g *13/22*
U.S. Cl. 96—1.1 10 Claims

An improved surface deformable imaging process is disclosed. A distinct humidity insensitive layer comprising a polar material and having a thickness of up to about 0.3 micron (μ) is deposited on the surface of a thermoplastic composition. An electrostatic charge pattern is produced on the coated surface of the thermoplastic. When exposed to a softening environment the surface of the thermoplastic deforms in an imagewise manner corresponding to the charge pattern.

3,729,311

ELECTROSTATIC TRANSFER METHOD

Michael J. Langdon, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 830,426, June 4, 1969, abandoned. This application July 15, 1971, Ser. No. 162,897
Int. Cl. G03g *13/22, 13/16, 15/22*
U.S. Cl. 96—1.2 8 Claims

An improved method of successively transferring a plurality of powder images, such as toner images of different colors, from an electrostatic plate onto a single copy sheet by employing an electrically biased transfer drum to bring the copy sheet in contact with the electrostatic plate during successive transfer steps. During transfer of the first toner image, the transfer drum is biased at a first potential and during the transfer of all succeeding toner images, the transfer drum is biased at a potential greater than the first potential, the potential applied to the transfer drum during any one succeeding transfer step being of greater value than the potential applied thereto during the immediately preceding transfer step.

3,729,312

ELECTROPHOTOGRAPHIC COMPOSITION EMPLOYING POLY(VINYL-HALOBENZAL) BINDER FOR ORGANIC PHOTOCONDUCTORS

Raymond H. Young, Jr., Macon, Ga., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 22, 1971, Ser. No. 155,654
Int. Cl. G03g 5/04
U.S. Cl. 96—1.5 9 Claims

Disclosed herein are poly(vinyl-halobenzal) binders for photoconductor compositions used in reprographic applications.

3,729,313

NOVEL PHOTOSENSITIVE SYSTEMS COMPRISING DIARYLIODONIUM COMPOUNDS AND THEIR USE

George H. Smith, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,392
Int. Cl. G03c 1/72
U.S. Cl. 96—27 R 5 Claims

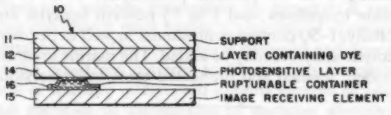
A photosensitive admixture comprising a diaryliodonium compound and a compound capable of sensitizing 2-methyl-4,6-bis(trichloromethyl)-s-triazine.

3,729,314

NOVEL PHOTOGRAPHIC PROCESSES AND PRODUCTS

Howard C. Haas, Arlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 740,965, June 28, 1968. This application Dec. 18, 1969, Ser. No. 886,305
Int. Cl. G03c 11/12
U.S. Cl. 96—29 D 10 Claims



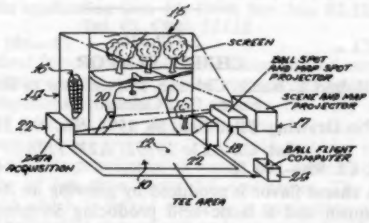
A novel image forming system comprising forming an imagewise distribution of a mordant in the developed areas of an exposed photosensitive layer, mordanting dye in said areas, and forming a reverse image in terms of dye transferred by diffusion from undeveloped areas of the photosensitive layer to an image-receiving layer.

3,729,315

METHOD OF MAKING SCENES FOR A GOLF GAME

Robert M. Conklin, Muskegon; Robert I. Anderson, Spring Lake; Michael G. Gautraud, Muskegon, and William H. Shimanski, Norton Shores, all of Mich., assignors to Brunswick Corporation, Skokie, Ill.

Filed Oct. 1, 1970, Ser. No. 77,300
Int. Cl. G03c 5/04
U.S. Cl. 96—27 R 14 Claims



A method of providing scenes for use in indoor golf games having a tee, a screen in front of the tee, a means for projecting on the screen any one of a plurality of scenes taken from different locations on a golf hole, data acquisition means and a computer associated therewith for computing the trajectory of a ball hit from the tee and a ball spot projecting means responsive to the computer for projecting a spot of light on the screen and on the scenes displayed thereon to illustrate the trajectory of the ball, which method permits the use of scenes from actual golf holes taken by photographic methods and eliminates inaccuracies in the ball spot projection that would normally be present due to the uneven nature of the terrain normally found on actual golf holes.

3,729,316

OPTIMIZED GLASS PHOTOGRAPHIC MASK

Paul P. Castrucci, Poughkeepsie, Nadim F. Haddad, Hopewell Junction, and Raymond P. Pecoraro, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Feb. 17, 1970, Ser. No. 12,150
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 2 Claims

A process for making a photographic optical glass mask that is used in silicon integrated circuit wafer processing. An optical glass mask is made by means of a step and repeat camera. Displacement error which is caused by the difference in coefficients of expansion between the microset scale of the step and repeat camera and the photographic optical mask, is minimized by using the same material for both elements. Further displacement error caused by thermal mismatch of the optical glass mask and the silicon wafer is minimized by using a borosilicate glass mask having a linear coefficient of expansion of 3.5×10^{-6}/degrees C., which substantially matches the linear coefficient of expansion of the silicon wafer material.

3,729,317

PHOTOGRAPHIC FILM WITH MAGNETIC RECORDING LAYER

Ronald M. Stimson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original application May 1, 1970, Ser. No. 33,969. Divided and this application Apr. 20, 1972, Ser. No. 246,013
Int. Cl. G03c 1/84
U.S. Cl. 96—84 R 12 Claims

A magnetic recording member such as tape or striped motion picture film wherein a layer of ferromagnetic particles is bound on a synthetic resin web by a binder consisting essentially of cellulose nitrate in intimate mixture with a polymeric composition consisting essentially of, by weight, 50–80% vinylidene chloride, 2–30% acrylonitrile, and 0–60% of methyl methacrylate or acrylate or hydroxy propyl methacrylate. This binder is especially good for poly(ethylene terephthalate) webs. Best adherence to a web is secured when the ferromagnetic particles and the above binder are deposited from an organic solvent wherein at least 8% of the solvent is N,N-dimethyl formamide or acetamide.

3,729,318

PROCESS FOR CROSS-LINKING SILVER HALIDE GELATINO EMULSION LAYER CONTAINING NON-DIFFUSIBLE COMPOUND HAVING EPOXIDE AND ISOCYANATE GROUPS

Wolfgang Himmelmann, Opladen, Peter Bergthaller, Cologne, and Bernd Quiring and Kuno Wagner, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed July 21, 1971, Ser. No. 164,811
Claims priority, application Germany, July 25, 1970, P 20 36 998.6
Int. Cl. G03c 1/30
U.S. Cl. 96—111 4 Claims

Photographic gelatine layers have to be hardened in order to improve the mechanical properties and to raise the melting point of the layer. Excellent hardening is

obtained by means of low molecular compounds having a hardeny epoxide and a hardening isocyanate group.

3,729,319

OPTICAL SUPERSENSITISATION OF SILVER HALIDE EMULSIONS WITH THREE CYANINE DYES

Robin Jefferson and Christopher John Palles, Ilford, Essex, England, assignors to Ilford Limited, Ilford, Essex, England

Filed June 2, 1971, Ser. No. 149,171
Int. Cl. G03c *1/14*
U.S. Cl. 96—124 4 Claims

This invention relates to photographic light-sensitive material which comprises a silver halide emulsion containing a super-sensitizing combination. The latter consists of three different dyestuffs. It is useful for increasing the sensitivity of a green sensitised emulsion.

3,729,320

METHOD OF NOURISHING MAMMALS

Fritz Kramer, 60–11 Broadway, Woodside, N.Y. 11377

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,258
Int. Cl. A23k *1/00*
U.S. Cl. 99—9 6 Claims

Chicken manure liquefied and absorbed in a small amount of urea-formaldehyde polymer foam and thereafter incubated for fermentation and propagation of the microorganisms contained in the manure is a practically dry product, free from unpleasant odor and rich in protein of microbial origin. It is a feed supplement readily accepted and tolerated as nourishment by domestic animals, particularly ruminants.

3,729,321

PREPARATION OF BEER

Nickolas Lothar Vacano, Seattle, Wash., assignor to The Rainier Companies, Inc., Seattle, Wash.

Filed Oct. 20, 1970, Ser. No. 82,404
Int. Cl. C12c *11/04;* C12g *3/00*
U.S. Cl. 99—31 7 Claims

Beer is prepared by carrying out the steps of fermenting, aging and finishing in a large size thin-shelled outdoor tank having a conical bottom inner surface downwardly sloped at 5 to 25° to an outlet. Carbon dioxide gas is supplied from an external supply to a central area above the tank bottom and bubbled upwardly at a rate which effects upward central flow of colder liquid whereby there is achieved cooling by induced convection, and downward peripheral flow of liquid along and about the tank walls to transport yeast to a settling zone on the bottom with minimal disturbance of yeast settling on the bottom.

3,729,322

FREEZE AND THAW IMITATION SOUR CREAM

Philip B. Calvert, Denver, Colo., assignor to Roberts Dairy Company, Omaha, Nebr.

Filed Feb. 27, 1970, Ser. No. 15,289
Int. Cl. A23c *13/00*
U.S. Cl. 99—54 7 Claims

A food product having the flavor and consistency of sour cream, which is capable of being frozen for an extended period of time and subsequently thawed while still retaining its smooth texture and which contains a unique combination of hydrophilic colloids including cross-linked amioca starch, low methoxyl pectin and hydroxypropyl methyl cellulose. The invention also includes the process by which the product is manufactured.

3,729,323

PROCESS FOR IMPROVING THE TEXTURE, RIGIDITY, AND COLOR OF FRIED POTATO PRODUCTS

Masahide Nonaka, Moraga, Earl Hautala, Richmond, and Merle L. Weaver, Martinez, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed July 19, 1971, Ser. No. 164,037
Int. Cl. A23b *7/04;* A23l *1/12*
U.S. Cl. 99—100 P 5 Claims

The texture, rigidity, and color of fried potato strips is vastly improved when their pre-fried precursors are prepared by (a) freezing the surface of the raw strip, (b) leaching the surface sugars with warm water, (c) parfrying the so-treated strip, and (d) refreezing said strip either superficially or totally.

3,729,324

SEPARATION OF EDIBLE TISSUE FROM EDIBLE FLESH OF MARINE CREATURES

Gottlieb Bernhard Fehmerling, Bridgeton, N.J., assignor to Ocean Research Corporation, Hopewell, N.J.

Continuation-in-part of Ser. No. 843,850, July 22, 1969, abandoned. This application Oct. 16, 1970, Ser. No. 80,459
Int. Cl. A22c *29/00*
U.S. Cl. 99—111 24 Claims

A method for separation of undesirable edible tissue such as the reproductive, digestive, or other tissue, including skin, from a marine creature such as shellfish, abalones, conches, mussels, scallops, oysters, and clams, or fish such as catfish, tuna, trout, haddock, cod, and flat fish, by immersing the marine creature after any hard shell it may have had is removed in a 0.003–3 percent aqueous solution of enzymes containing 1 to 75 percent proteolytic, 1 to 75 percent glycoside hydrolases, and 1 to 75 percent lipolytic enzymes. Optionally, 1–50 percent pentosanase as well as pectolytic and cellulolytic enzymes may be added. The marine creatures may be divided, washed and preheated prior to immersion in the bath.

3,729,325

PROCESS FOR FORMING A STABLE OIL AND WATER-SOLUBLE PROTEIN-CONTAINING EMULSION AND PRODUCT THEREOF

Norman B. Howard, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 51,007, June 29, 1970. This application July 7, 1971, Ser. No. 160,546
Int. Cl. A23d *3/00*
U.S. Cl. 99—123 26 Claims

A stable emulsion is formed from liquid fat, particular acidic lipids, water, water-soluble heat-denaturable protein, and, when said acidic lipid is a lipid other than a fatty acid chloride, a polyvalent metal ion salt. The stable emulsion is useful as a food per se or a food additive in preparing food products such as snack foods and synthetic meats. A process for preparing such emulsions is provided.

3,729,326

CHEESE FLAVOR

Robert L. Kasik, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,751
Int. Cl. A23c *19/02;* A23l *1/26*
U.S. Cl. 99—140 R 41 Claims

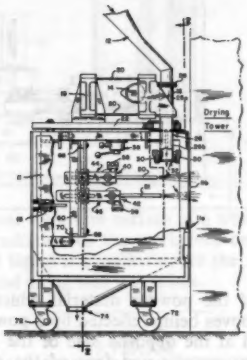
A cheese flavor is produced by growing an Acetobacter organism and a lactic acid producing Streptococcus organism in a fluid medium containing a protein and carbohydrate. Growth is carried out for at least five hours at 60° to 130° F.

3,729,327

APPARATUS FOR AGGLOMERATION

Stephen Linn, Tenafly, and Robert F. Bardsley, Harrington Park, both of N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Feb. 25, 1971, Ser. No. 118,738
Int. Cl. A23f 1/08
U.S. Cl. 99—467 9 Claims



An improved apparatus for agglomerating pulverant materials such as soluble coffee powder wherein the particles to be agglomerated are distributed and positioned for wetting and impaction in a gaseous atmosphere by means of a vertically vibrating distributor plate having a plurality of apertures in a horizontal surface. The apparatus is designed and operated to expose the powdered material to the gaseous atmosphere in the form of spatially interrupted parallel streams of falling individual particles or colligations of particles whereby each stream has a substantially rectilinear geometry prior to being intercepted by jets of vapor, such as saturated steam, which disrupt the formation of particles or colligations of particles to the extent they are wetted, randomly impacted to agglomerate form, and concomitantly redirected into a tempering and drying zone.

ERRATUM

For Class 106—15 see:
Patent No. 3,729,434

3,729,328

CELLULAR FOAMED MATERIAL AND METHOD FOR THE MANUFACTURE THEREOF

Jules Magder, Princeton, N.J., assignor to Princeton Organics, Inc., Princeton, N.J.

Original application Sept. 23, 1968, Ser. No. 761,761, now Patent No. 3,565,647, dated Feb. 23, 1971. Divided and this application Oct. 19, 1970, Ser. No. 82,123
Int. Cl. C04b 21/12
U.S. Cl. 106—87 6 Claims

A method for continuously producing foamed cement-based cellular material by subjecting specific liquid and solid components to high-shear mixing for very short periods of time and then discharging the mixture so that it can foam and set promptly. The liquid material which is mixed consists principally of water, and preferably has a viscosity of less than about 2.5 centipoises. The solid component which is mixed contains a particulate water-settable (hydraulic) cement and an inert particulate lamellar foam stabilizing agent. A gas-forming agent will also be included as part of either or both of the liquid and solid components. The time of mixing is not greater than about four seconds and preferably less than about one second, and the high-sheer mixing preferably provides a maximum nominal velocity gradient greater than about 500 seconds^{-1} for substantially all of the material. The maximum nominal velocity gradient is defined for this purpose as the maximum value of the ratio of relative speed of two surfaces of the mixer between which substantially all of the mixture is passed, to the distance between said two surfaces. Preferably the mixer comprises a rotor disposed along the axis of the tubular chamber into which the ingredients to be mixed are continuously fed, the rotor comprising helical screw means disposed along the length of the rotor for moving the mixture through the chamber to its outlet and for providing at least part of the mixing action, together with mixing pins exending radially from the axis of the rotor to within a small distance of the chamber wall to effect further mixing action. The resultant product is of increased compressive strength and characterized by the fact that substantially all of the pore volume thereof is provided by pores having effective diameters outside a range extending from about two microns to about 300 microns, and preferably at least about 97% of the pore volume is provided by pores outside said range. There is also provided novel cellular products consisting essentially of high alumina cement, as the water settable cement, and the stated inert particulate lamellar foam stabilizing agent.

3,729,329

NONAQUEOUS LUBRICANT-BINDER SYSTEM FOR REFRACTORY RAMMING MIXES

Martin Morris, Pittsburgh, and George Ronald Henry, Bethel Park, Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

No Drawing. Filed July 9, 1971, Ser. No. 161,350
Int. Cl. C04b 55/04
U.S. Cl. 106—58 4 Claims

A nonaqueous lubricating-bonding system for refractories, especially basic refractories, of increased storage life, said system including a lubricating oil in combination with a metallic stearate.

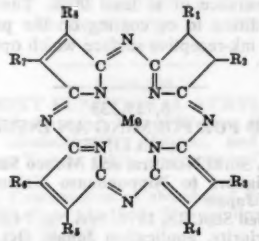
3,729,330

PHTHALOCYANINE ORGANIC PIGMENTS

Heinrich Leister and Karl-Heinz Wolf, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,035
Claims priority, application Germany, Mar. 17, 1970, P 20 12 505.7
Int. Cl. C08h 17/14
U.S. Cl. 106—288 Q 8 Claims

Copper phthalocyanine and nickel phthalocyanine pigments containing 60–98 mol percent of a copper or nickel phthalocyanine, which may be substituted and 40–2 mol percent of one or more tetraazaporphines of the formula



wherein

Me represents copper or nickel,

R_1 represents an alkyl radical, a cycloalkyl radical, an aralkyl radical or an aryl radical and

R_2, R_3, R_4, R_5, R_6, R_7 and R_8 independently of one another represent hydrogen, an alkyl radical, a cycloalkyl radical, an aralkyl radical or an aryl radical, and wherein one or more of the pairs R_3 and R_4, R_5 and R_6 or R_7 and R_8 are cyclised to give cycloaliphatic units or aliphatic units which may be substituted by chlorine, bromine, lower alkyl, cycloalkyl, aralkyl, phenyl, alkoxy or sulphonic acid groups, or units containing hetero-atoms

and process for their production.

These pigments are resistant to crystallisation in organic solvents.

3,729,331

PROCESS FOR REFLOWING ORGANIC SURFACES

Thomas A. Vivian, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Application Dec. 1, 1969, Ser. No. 881,284, now Patent No. 3,663,255, which is a continuation-in-part of abandoned application Ser. No. 844,662, July 24, 1969. Divided and this application Mar. 25, 1971, Ser. No. 128,175

Int. Cl. B23p 7/00; B29c 25/00

U.S. Cl. 117—2 R **2 Claims**

Composition for reflowing organic surfaces, such as paints and polystyrene, have been discovered which contains by volume 50 to 90% of a liquid chlorinated aliphatic hydrocarbon, 5 to 30% of a liquid ketone or alcohol, 2 to 20% of a glycol ether alkanoate and 0 to 30% of an alkyl alkanoate, all of such components having a boiling point below 200° C.

3,729,332

MICROPOROUS POLYOLEFIN INK-RECEPTIVE PAPER AND METHOD

Willard T. Grubb, Schenectady, N.Y., and Robert A. Macur, Milwaukee, Wis., assignors to General Electric Company

Filed Apr. 6, 1970, Ser. No. 25,702

Int. Cl. D21h 1/10

U.S. Cl. 117—11 **6 Claims**

A microporous polyolefin ink-receptive paper has a composite structure of natural paper and a microporous polyolefin with a porosity of 40 to 90% which composite structure has a diffuse reflectance of at least 90%. Another microporous polyolefin ink-receptive paper has a natural or artificial paper support or backing with a microporous polyolefin coating on at least one major surface which coating has a porosity of 40 to 90% and has a diffuse reflectance of at least 90%. The microporous polyolefin addition to or coating on the paper provides a lightweight ink-receptive surface which optically brightens the paper.

3,729,333

METHOD FOR FORMING AN INSULATION COATING

Takeshi Imai, Siniti Nomura, and Muneo Sumita, Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Japan

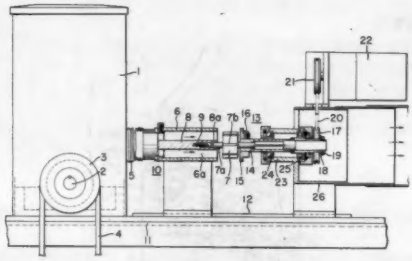
Filed Sept. 23, 1970, Ser. No. 74,692

Claims priority, application Japan, Oct. 3, 1969, 44/79,304; May 11, 1970, 45/40,408

Int. Cl. B44d 1/094; B05b 5/02

U.S. Cl. 117—16 **5 Claims**

A method for forming an insulation coating on an iron core of an electric winding and like wherein heat meltable powder material is sprayed onto one end face of the core so as to impinge thereto with various angles, a portion of the powder material being deposited on said end face and remainder being passed through coil receiving grooves in the core impinging with various angles and partially depositing on the walls of the grooves,



the portions of the powder material which has passed through the grooves being reflected by a powder shielding means disposed at the opposite side of the core so as to impinge on the opposite end face of the core, and the surplus powder material being removed and recovered by a suction mechanism such as a dust collector.

3,729,334

IMAGING PROCESS

Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 707,575, Feb. 23, 1968. This application Dec. 30, 1970, Ser. No. 102,726

Int. Cl. B41m 5/00

U.S. Cl. 117—37 LE **1 Claim**

The subject matter of the present invention is directed to a novel imaging system whereby a donor dispenser is utilized to deliver the developer particles of a liquid suspension in an imagewise manner to produce the final copy. An electrode configuration is provided, capable of establishing a non-uniform electric field within a liquid developer comprising uncharged developer particles. As a result of the established electric field within the system, the pigment particles present in the developer are uniformly coated on at least one surface of the dispensing master. The dispensing master is removed from the developer and delivers the developer particles in an imagewise manner to a suitable transfer sheet.

3,729,335

METHOD OF DEPOSITING INORGANIC COATINGS FROM VAPOUR PHASE

Georgy Alexeevich Domrachev, ulitsa Minina 15a, kv. 3; Valery Vasilievich Melnikov, ulitsa Eltonskaya 50, kv. 3; Georgy Borisovich Kazarinov, ulitsa Belinskogo 106a, kv. 7; Gleb Alexandrovich Skorik, ulitsa Surikova 12, kv. 56; and Konstantin Konstantinovich Fukin, prospekt Lenina 30, korpus 7, kv. 61, all of Gorky, U.S.S.R.

Filed Apr. 22, 1971, Ser. No. 136,481

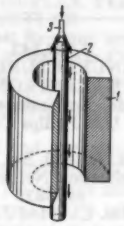
Claims priority, application U.S.S.R., May 29, 1970, 1,432,551

Int. Cl. B44d 1/02

U.S. Cl. 117—95 **4 Claims**

A method of depositing inorganic coatings from vapour phase involves the formation of vapour phase of liquid compounds of elements, as well as solutions or suspensions

of volatile compositions of said elements adapted to release deposited elements or compositions thereof during thermal decomposition due to heating and vaporization of



said liquid over the entire surface of a workpiece by proper thermal radiation of the workpiece being treated. To this end said liquid is supplied under the force of gravity adjacent to and along said workpiece.

3,729,336

SURFACE MODIFIED POLYESTER REINFORCING ARTICLES

Gazie K. Ragep, Durham, N.C., assignor to Beaunit Corporation, New York, N.Y.

No Drawing. Filed June 3, 1971, Ser. No. 149,822
Int. Cl. B32b *25/08*
U.S. Cl. 117—76 T **5 Claims**

Surface modified polyester reinforcing articles, such as filament, yarn, tire cord and the like, having improved adhesion when used as reinforcement in rubber articles are provided by cocrystallizing on the surface of a conventional polyester reinforcing article a composition comprising a mixture comprising (1) a copolymer comprising crystallizable ester units identical to those present in the polyester reinforcing article, polyoxyalkylene groups and polyepoxy containing groups and (2) a polyepoxide. The surface modified polyester reinforcing articles are prepared by applying the treating composition to the polyester article and subjecting the surface treated article to a temperature of at least 80° C. for a time sufficient to cause cocrystallization to take place on the surface of the treated polyester article. The polyester article is also treated, preferably by a second coating application, in a normal manner with a conventional polyhydric phenol-aldehyde-rubber latex, and then bonded to rubber using conventional methods. Improved rubber articles reinforced with polyester reinforcing articles are obtained having outstanding adhesion between the rubber and the polyester reinforcing articles.

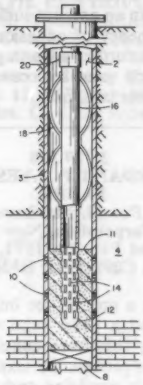
3,729,337

PRODUCTION OF PETROLEUM FROM UNCONSOLIDATED FORMATIONS

William G. Bearden and Charles A. Powers, Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Continuation-in-part of application Ser. No. 674,551, Oct. 11, 1967, which is a division of application Ser. No. 571,508, Aug. 10, 1966, now Patent No. 3,366,177. This application Apr. 22, 1970, Ser. No. 31,028
Int. Cl. E21b *43/08*
U.S. Cl. 117—98 **5 Claims**

A specially designed screen is described for use in wells producing oil from unconsolidated sands. The apparatus consists essentially of a sleeve fabricated from a ground hydraulic cement clinker, coated with a heat resistant film from material such as sodium silicate to impart compressive strength to the set clinker when the latter is exposed to oil. The clinker material which may be calcium



silicate, calcium aluminate or high alumina cement may have a particle size ranging from −4 to +40 mesh.

3,729,338

PROCESS FOR THE PREPARATION OF SELF-ADHESIVE TAPES AND FOILS

Horst Lehmann and Julius Curts, Hamburg, Germany, assignors to Biersdorf Aktiengesellschaft, Hamburg, Germany

No Drawing. Continuation of abandoned application Ser. No. 771,649, Aug. 29, 1968. This application Mar. 24, 1971, Ser. No. 127,849
Claims priority, application Germany, Oct. 31, 1967, P 17 19 096.4
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 P **5 Claims**

Shelf-adhesive tapes or foils which adhere to a variety of dissimilar surfaces upon mere contact without the need of more than slight pressure and have good resistance to heat are prepared by applying on a flexible support, after addition of a small amount of a catalyst and/or a polyfunctional compound, a low molecular copolymer which is spreadable at room temperature in a condition such that it has only small quantities of solvents therein, composed of acrylic acid alkyl esters and a relatively small amount of monomeric compounds which are polymerizable with them, and contain reactive groups in the molecule, and subsequently exposing the coating composition applied to the support to the action of heat for a short time. The action of heat causes the cross-linking of the coating composition and converts it from the liquid or thickly liquid state into a solid cohesive self-adhesive layer with the properties of a good self-adhesive mass.

3,729,339

HYDROXY FUNCTIONAL ACRYLIC INK

Robert H. Kiel, deceased, late of Weston, Ohio, by Jessie H. Kiel, administratrix, Weston, and William C. Grinonneau, Toledo, Ohio, assignors to Owens-Illinois, Inc.

No Drawing. Continuation of abandoned application Ser. No. 693,050, Dec. 13, 1967. This application Nov. 25, 1970, Ser. No. 92,946
Int. Cl. C03c *17/00, 21/00*
U.S. Cl. 117—124 E **33 Claims**

This invention relates to the preparation of a novel organic thermosetting resin base decorative composition having increased permanency of adhesion and decorative

properties when applied as a film or coating to a glass substrate, said composition consisting essentially of a hydroxyl functional acrylic resin, a thermosetting aminoplast resin, and an ambifunctional, epoxy reactive silane, the acrylic resin being present in an approximate stoichiometeric proportion relative to the aminoplast and the silane being present in an amount sufficient to substantially improve the permanency of adhesion of the composition to a glass surface. A further advantage of this invention is that the composition can be conveniently mixed and stored in one container until used.

3,729,340
FLAME RETARDANT POLYESTER-ACETATE FABRIC

Stancil Driftwood Powell, Matthews, N.C., assignor to Celanese Corporation, New York, N.Y.

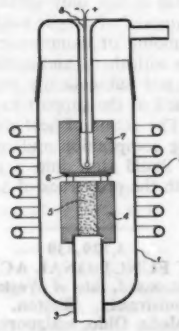
No Drawing. Filed Feb. 22, 1971, Ser. No. 117,817
Int. Cl. C09k *3/28;* B32b *27/12*
U.S. Cl. 117—136 **3 Claims**

There is provided a process for imparting both durable flame retardance and a good hand to a textile material whose fiber-forming substance consists of polyester and acetate fibers. In this process the textile material is passed through a solution or emulsion comprised of a flame retardant amount of tris-2,3-dibromopropyl phosphate. Thereafter the treated textile material is cured by subjecting it to a temperature of from about 275 to about 425 degrees Fahrenheit for from about 15 seconds to about 10 minutes. There is also provided a flame-retarded textile material with a good hand whose fiber-forming substance consists of polyester and acetate fibers; even after 50 home launderings, this textile material passes the U.S. Department of Commerce flammability test DOC PFF 3–70.

3,729,341
METHOD FOR PRODUCING EPITAXIAL III–V SEMICONDUCTOR LAYERS CONTAINING GALLIUM

Wolfgang Dietz and Hartmut Seiter, Munich, Bavaria, Germany, assignors to Consortium fur Elektrochemische Industrie G.m.b.H., Munich, Germany

Filed Nov. 5, 1970, Ser. No. 87,080
Claims priority, application Germany, Nov. 6, 1969, P 19 55 971.8
Int. Cl. C23c *11/00, 13/00;* H01l *7/36*
U.S. Cl. 117—201 **10 Claims**

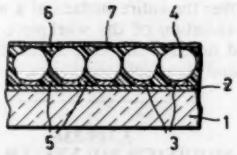


A method and apparatus for producing epitaxial III–V semiconductor layers of gallium in two stages, where in the first stage gallium-I-chloride is produced by heating a gas stream consisting of hydrogen and gallium-III-chloride to a temperature of 700–900° C. in the presence of a catalyst consisting of an element of the 5th, 6th or 8th sub-group of the Periodic System, and in the second stage said gallium-I-chloride is converted into a gas stream of III–V semiconductor material by heating said gallium-I-chloride to a temperature of 600–700° C. in admixture with an element of the 5th main group of the Periodic System, and then said III–V semiconductor material is deposited on a semiconductor substrate.

3,729,342
METHOD OF MANUFACTURING A RADIATION-SENSITIVE ELECTRONIC DEVICE

Ties Siebolt te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,556
Claims priority, application Netherlands, Apr. 16, 1969, 6905835
Int. Cl. B44d *1/16*
U.S. Cl. 117—217 **6 Claims**

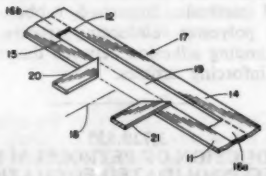


A method of providing a radiation-permeable contact layer in good electrical contact with radiation-sensitive or electroluminescent grains, the grains being spread on a metal layer which is situated on a radiation-permeable conductive layer, and upon heating in the melted condition the melted metal of the metal layer is drawn by capillary action to between the grains and the permeable conductive layer and the space between the grains is then filled with a polyurethane.

3,729,343
THERMOCOUPLE TAPE

Ralph D. Thomas, Cleveland, Ohio, assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Jan. 8, 1971, Ser. No. 104,885
Int. Cl. H01v *1/04*
U.S. Cl. 136—225 **6 Claims**



A thermocouple which may be rolled as a tape until needed and a method of making same are described. Thermoelectrically different metals are applied to a strip of electrically nonconductive material in longitudinally overlapping relationship. Apertures may be provided along the tape in the overlapping region at predetermined intervals. An adhesive material is applied to the side of the tape opposite the thermoelectric metals either before or after the thermoelectric metals are deposited. The tape may be cut or torn to form a thermocouple device which

is ready for application to a body whose temperature is to be monitored or measured.

3,729,344

PROCESS FOR MAKING THERMALLY HARDENED WROUGHT STAINLESS STEEL SHAPED MEMBER HAVING A DUPLEX FERRITIC/MARTENSITIC MICROSTRUCTURE

Stephen M. Lukes, West Reading, and Robert L. Caton, Sinking Spring, Pa., assignors to Carpenter Technology Corporation, Reading, Pa.

No Drawing. Filed Mar. 12, 1971, Ser. No. 123,813
Int. Cl. C21d *1/18, 7/14*
U.S. Cl. 148—12.4 8 Claims

Thermally hardened and strengthened members made from stainless steel containing 0.04–0.10% carbon, 0.04–0.08% nitrogen, up to 1% each of manganese and silicon, 16–17.5% chromium, up to 1.0% nickel and 0.75–1.5% molybdenum, which respond to tempering, can be cold worked up to about 50 to 75% reduction in area and have a duplex micro-structure of both ferrite and martensite.

3,729,345

METHOD FOR MAKING PROPELLERS OF HIGH-STRENGTH AND HIGH-TOUGHNESS CAST STEEL

Teishiro Oda, Makoto Nakamura, and Masato Zama, Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Application Oct. 8, 1969, Ser. No. 864,898, now Patent No. 3,661,658, dated May 9, 1972, which is a division of application Ser. No. 643,679, June 5, 1967, now abandoned. Divided and this application Sept. 20, 1971, Ser. No. 182,109
Claims priority, application Japan, June 11, 1967, 42/37,570
Int. Cl. B22d *25/06;* C21d *1/78*
U.S. Cl. 148—3 5 Claims

A high strength, high toughness cast steel for marine propellers is comprised of not more than 0.25% of carbon, not more than 1% of silicon, not more than 3% of manganese, from 5–20% of chromium, from 1–8% of cobalt, and from 0.5–7% of one or both of molybdenum and tungsten, and the remainder consisting of iron. In addition, the cast steel may contain up to 8% of nickel and up to 4% of copper, depending on the conditions.

The method of making propellers of cast steel of the composition set forth above comprises the steps of after casting the propeller slowly cooling it at a rate of not more than 1° C. per minute, reheating the casting to between 800° and 1000° C. for improving its strength, ductility and toughness, cooling the casting, and then aging it at 450–700° C. In making the casting it may be cast as a single unit or in individual sections; where individual sections are cast, the method of forming the propeller includes the steps of welding the individual sections, heat treating the welded casting at 800–1000° and then slowly cooling the casting. Further, whether the casting is formed as a single unit or from individual sections, the method includes the step of annealing at 630–700°.

3,729,346

HIGH-PRESSURE SPRAY PROCESS FOR PHOSPHATING IRON OR STEEL SURFACES

Hans Gotta, Weiden, and Norbert Schulz, Oberdollendorf, Germany, assignors to Gerhard Collardin GmbH, Cologne-Ehrenfeld, Germany

No Drawing. Filed May 21, 1971, Ser. No. 145,931
Claims priority, application Austria, June 1, 1970, 4,872/70
Int. Cl. C23f *7/10*
U.S. Cl. 148—6.15 Z 7 Claims

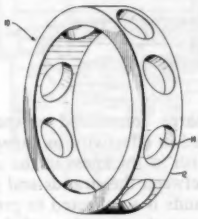
A process for applying rust-preventing phosphate coatings to surfaces of objects made of iron or steel by spraying said objects with an acid solution of phosphates of layer-forming metals under a spray pressure of 10 to 100 atmospheres gauge.

3,729,347

HIGH-STRENGTH, CENTRIFUGALLY CAST COPPER-BASE ALLOY BEARING CAGE

William D. Brown, Churchville, Thomas L. Robertshaw, Warminster, and Garner W. Williams Fox Chase Manor, Pa., assignors to Janney Cylinder Company

Filed Dec. 11, 1970, Ser. No. 97,193
Int. Cl. C22c *9/04*
U.S. Cl. 148—32 3 Claims



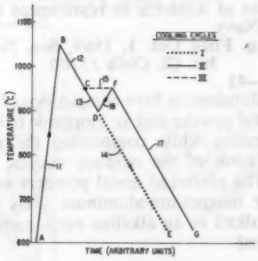
Alloys consisting essentially of from about 26.0 to about 34.0% zinc, from about 4.5 to about 10.0% (preferably from about 4.5 to about 6.0%) manganese, from about 0.5 to about 1.5% iron, from about 1.0 to about 2.5 aluminum, and the balance copper. Lead can be optionally added, in amount of from about 0.5 to about 1.5%. The alloys have improved physical properties, particularly at elevated temperatures, and can be centrifugally cast for manufacture in antifriction bearing cages.

3,729,348

METHOD FOR THE SOLUTION GROWTH OF MORE PERFECT SEMICONDUCTOR CRYSTALS

Robert H. Saul, Scotch Plains, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 29, 1970, Ser. No. 76,550
Int. Cl. H01l *7/38, 7/00;* B01j *17/20*
U.S. Cl. 148—172 6 Claims



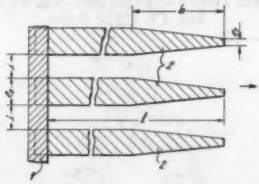
If the deposition of semiconductor material from solution onto an imperfect seed is halted for a short time, material deposited subsequent to the halt contains fewer dislocations than material deposited prior to the halt. In compound semiconductors, this procedure has been applied, for instance, to the epitaxial growth of gallium phosphide (GaP) from gallium solution onto a GaP Czochralski pulled substrate.

3,729,349

PROPULSIVE DOUBLE-BASE CHARGES, STRAND-LIKE AND HAVING VARIABLE THICKNESS

Yves Jean Guy Duprat, 6, rue Gabriel Foucher, 18 Bourges, France

Filed Jan. 7, 1971, Ser. No. 104,802
Int. Cl. C06b 19/00
U.S. Cl. 149—2 5 Claims



A propellent charge constituted of spaced strands of material is increased in effectivity by tapering the strands so that they diminish in thickness in the direction of gas flow. The spaces between the strands and particularly the tapering of the strands is so effected to provide minimum passage areas. The combustion time of the charge is less than 1 second and the powder charges used have combustion rates which are substantially constant over a large range of pressures.

3,729,350

COMPOSITION FOR FORMING CLOUD OF INCAPACITATING AGENT UPON DETONATION

William A. Gey, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Feb. 2, 1970, Ser. No. 12,880
Int. Cl. C06b 17/00
U.S. Cl. 149—21 4 Claims

A formulation in pellet form which upon detonation forms an instantaneous cloud of an incapacitating agent which comprises a blend of ortho-chlorobenzamalonitrile and a high explosive.

3,729,351

FLARE COMPOSITION COMPRISING DRY BLEND OF METAL FUEL AND EUTECTIC MIXTURE OF OXIDIZER SALTS

Howard W. Kruse, Ridgecrest, Calif., assignor to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Oct. 1, 1969, Ser. No. 866,069
Int. Cl. C06b 15/00
U.S. Cl. 149—41 4 Claims

Binderless illumination flare compositions formed by dry blending a metal powder and an inorganic oxidizer to form a mixture, heating while compacting the mixture in a casing until fusion of the oxidizer occurs, then cooling the mixture. The preferred metal powders are aluminum, magnesium or magnesium-aluminum alloy and the oxidizers are an alkali or an alkaline earth metal nitrate and mixtures thereof.

3,729,352

DOPED AMMONIUM PERCHLORATE OXIDIZERS AND METHOD OF PREPARING SAME

John Norman Maycock and Louis Witten, Baltimore, Md., assignors to Martin Marietta Corporation, New York, N.Y.

No Drawing. Filed Jan. 5, 1968, Ser. No. 695,865
Int. Cl. C06b 13/00
U.S. Cl. 149—74 8 Claims

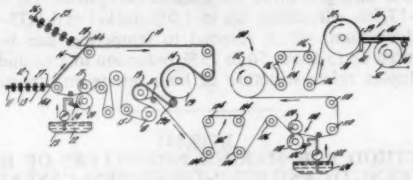
An improved class of oxidizers is formed by precipitating crystals from an acid solution in which ammonium perchlorate has been dissolved and from an acid solution in which ammonium perchlorate and a quantity of nitronium perchlorate have been dissolved.

3,729,353

METHOD OF PRODUCING A HIGH-LOFT, NONWOVEN FABRIC

Robert J. Stumpf, Appleton, William J. Mattes, Neenah, and Herman G. Minshell, Menasha, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 5, 1970, Ser. No. 77,840
Int. Cl. D04h 11/00
U.S. Cl. 156—72 12 Claims



A high-loft, nonwoven fabric with a backing layer of adhesive and a multiplicity of fibers looped outwardly from the backing; and a method and apparatus for making the fabric by first embedding a web of elements in an open pattern of adhesive, bonding the elements in the adhesive, applying a second adhesive in an open pattern to the first open pattern, and consolidating the adhesives into a continuous backing layer while looping the elements outwardly from the backing. In certain instances the backing may be substantially stretched, resulting in a fabric with a partially consolidated backing layer. The second application of adhesive provides for better element attachment to the backing layer, enabling the use of heavier elements, such as natural or synthetic threads or yarns.

3,729,354

METHOD FOR MAKING INSULATED WALL SECTIONS

Ronald D. Sukolics, Elkhart, Ind., assignor to American Metal Climax, Inc., New York, N.Y.

Filed July 31, 1970, Ser. No. 59,982
Int. Cl. B29c 11/00; B29d 3/00; B32b 31/06
U.S. Cl. 156—244 9 Claims

An elongated heat insulating structural member of the type including a pair of spaced apart structural sections secured together by a continuous web of heat insulating material is fabricated by moving a pair of spaced apart structural sections along a predetermined path and flowing a stream of heat insulating material in a semiplastic state into a continuous void provided between the structural sections. A backing member is provided to close the bottom of the void until the heat insulating material is cured and bonded to the structural sections forming an integral heat insulating structural member.

3,729,355

METHOD FOR THE PRODUCTION OF COMPOSITE PLATES

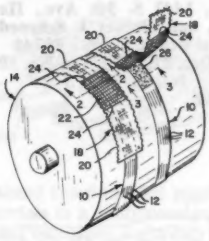
Jean Schrade, Zurich, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,041
Claims priority, application Switzerland, Apr. 29, 1970, 6,429/70
Int. Cl. B32b 31/20
U.S. Cl. 156—283 6 Claims

A method for the production of a composite plate having two metal sheets and a thermosetting synthetic resin

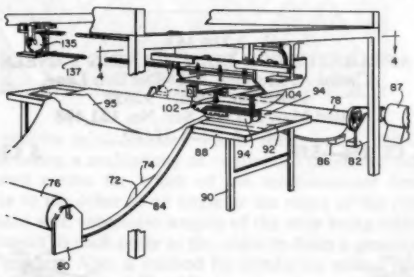
therebetween involves sinter molding said resin between said metal sheets whereby said resin will be hardened and will be substantially porous.

3,729,356
METHOD OF MAKING CEMENTED FIBER OPTICAL DEVICES
George J. Carpenter, Southbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed Mar. 8 ,1971, Ser. No. 121,812
Int. Cl. B32b *17/04*
U.S. Cl. 156—296 5 Claims



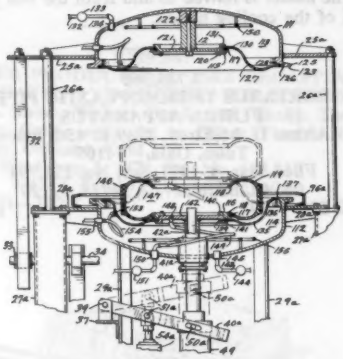
Fabricating coherent bundles of cemented together ribbons of optical fibers wherein a connecting cement is screened onto a section of the length of each ribbon, squeegeed to the exact thickness of the screen and allowed to become at least partially dried with the screen in place. Removal of the screen then leaves a clean and even coating of the cement upon each ribbon for adversely securing the ribbons together as a coherent cemented assembly.

3,729,357
THERMOPLASTIC HEAT SEALING APPARATUS
Henry D. Swartz, Chestnut Hill, Mass., assignor to General Heat Sealing Corporation, Braintree, Mass.
Filed June 25, 1971, Ser. No. 156,865
Int. Cl. B29c *19/02*
U.S. Cl. 156—380 11 Claims



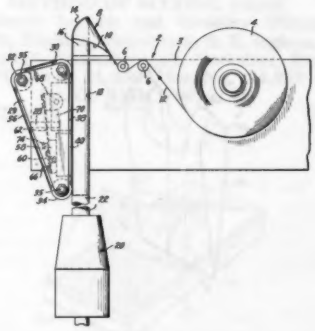
A linearly extending seal or weld between a pair of heat susceptible thermoplastic sheets is produced by interposing the thermoplastic sheets in superposition between a pair of heat resistant control sheets, and sliding an elongated heating wiper along its axis in contact with one of the control sheets in order to apply heat and pressure to the thermoplastic sheets while countered by the other of the control sheets. The result is a weld characterized by a trough at one face of the superposed thermoplastic sheets and a ridge at the other face of the superposed thermoplastic sheets, the trough and the ridge being in registration and the region therebetween being integrated. Apparatus for effecting this process and producing this product is disclosed.

3,729,358
APPARATUS FOR RETREADING TIRES
Carlton Keith Barefoot, 601 Shellbark Road, Muncie, Ind. 47304
Filed July 6, 1970, Ser. No. 52,534
Int. Cl. B29h *5/04*
U.S. Cl. 156—394 9 Claims



The invention is a method and apparatus for bonding and shaping retread stock to a tire casing. A pair of circumferentially mating mold elements engage the tread area of a tire to be retreaded. The mols are divided along a horizontal mating plane and are supported in aligned relationship within a pair of substantially hemispherical pressure chamber members adapted for closing and opening about the tire. Centering plates are provided to locate the tire concentrically within the mold and to form an internal pressure chamber within the tire. The internal pressure chamber is pressurized forcing the tire against the mold elements. Subsequently the outer chamber or chambers are pressurized to a pressure equal to the internal pressure. The centering or bead plates are then displaced from engagement with the tire. Heat is applied for bonding and shaping the tread stock to the tire casing.

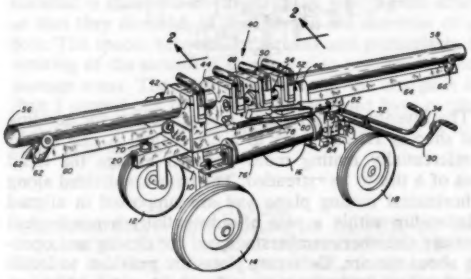
3,729,359
CONTINUOUS TUBE SEALER
Claude E. Monsees, Durham, N.C., assignor to Wright Machinery Company, Inc., Durham, N.C.
Filed Apr. 30, 1971, Ser. No. 138,981
Int. Cl. B29d *23/10*
U.S. Cl. 156—466 9 Claims



A tube former directs a web of unsupported polyethylene film into tubular form about a cylindrical mandrel with its longitudinal edges overlapping. An endless belt

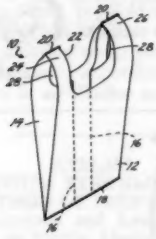
of Teflon impregnated Fiberglas is trained over idler pulleys to a run along the overlapped edges and a heater device heats the belt and film to fuse the overlapped edges and cause them to adhere to each other and to the belt so that the belt is pulled along as the tube is drawn along the mandrel. Cooling means then cools the belt and film and one of the idler pulleys strips the belt from the sealed tube. The heater is moved to and from the belt under the control of the cooling means.

3,729,360
PORTABLE THERMOPLASTIC PIPE FUSION APPARATUS
Arthur H. McElroy, 2789 E. 45th Place, Tulsa, Okla. 74105
Filed Mar. 8, 1971, Ser. No. 121,791
Int. Cl. B32b *31/12, 31/18, 31/20*
U.S. Cl. 156—499 **11 Claims**



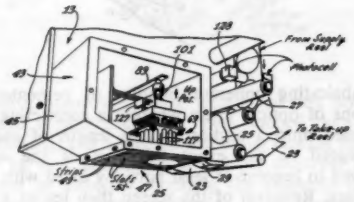
A portable wheeled apparatus for use in fusing thermoplastic (i.e., polyethylene) pipe includes means for hydraulically actuating the pipe for facing the pipe ends, heating the pipe ends and fusing them together all in axial alignment of the pipe.

3,729,361
APPARATUS FOR PRODUCING A PLASTIC SHOPPING BAG
Edward B. Westlake, Jr., 307 Lincoln Ave., Havertown, Pa. 19083
Original application Dec. 24, 1969, Ser. No. 887,807, now Patent No. 3,671,350. Divided and this application Dec. 2, 1971, Ser. No. 204,190
Int. Cl. B32b *31/00;* **B31b** *1/14*
U.S. Cl. 156—510 **5 Claims**



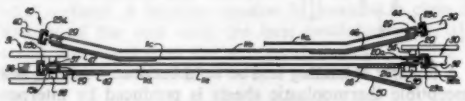
Apparatus for making an over-the-arm plastic bag of polyethylene and similar thermoplastic resins which comprises feeding tubular side-gusseted plastic stock through a perforator or cutter station and then through a heat sealing station where a generally rectangular perforated or cut area is produced every two bag lengths in the front and back panels and gussets of the stock and the heat sealing and severing is effected simultaneously transversely of the stock centrally between the perforated or cut areas to form the bottoms of the bags and transversely across and bisecting the perforated or cut area to produce the tops of the bags without opening the welds themselves.

3,729,362
LABELING MACHINE
John B. French, 1442 S. 9th Ave., Hacienda Heights, Calif. 91745, and Hubert J. Schroeder, 4572 Birchwood Ave., Seal Beach, Calif. 90740
Filed Dec. 21, 1970, Ser. No. 100,283
Int. Cl. B44c *1/24*
U.S. Cl. 156—542 **14 Claims**



A labeling machine comprising a supply reel and a take up reel. Labels are adhesively secured to a backing strip and the backing strip is wound on the supply reel. The backing strip and labels are moved from the storage reel toward the take up reel and the labels are peeled off of the backing strip and momentarily retained at a first station. An applicator transfers the label from the first station to an adjacent article.

3,729,363
APPARATUS FOR EDGE JOINING PANELS
Carlos A. Mollura, 2824 Del Oro Lane, Fullerton, Calif. 92632
Filed Mar. 5, 1971, Ser. No. 121,408
Int. Cl. B32b *31/10*
U.S. Cl. 156—559 **5 Claims**



A plurality of plastic film panels are stacked and joined edge-to-edge to form a wide, zigzag-folded sheet. Each joint incorporates an extruded plastic joining member of U-shaped cross-section having leg portions welded respectively to the panel edges being joined. Projecting from the closed end of the joining member is a guide bead adapted to direct the panels through an automated production facility in which sets of panels are welded together at successive stations to form the folded sheet.

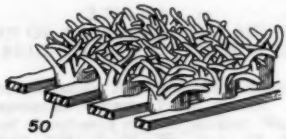
3,729,364
CONTINUOUSLY MOLDED THERMOPLASTIC MATERIALS

Jack Doleman, Gulf Breeze, Fla., and William H. Hills, Durham, N.C., assignors to Monsanto Company, St. Louis, Mo.

Continuation of application Ser. No. 857,461, Sept. 12, 1969, now abandoned, which is a division of application Ser. No. 650,986, July 3, 1967, now Patent No. 3,507,010. This application July 1, 1971, Ser. No. 158,975

Int. Cl. B32b 3/10, 3/12

U.S. Cl. 161—36 1 Claim



A three-dimensional fused molded product made from thermoplastic materials in a continuous injection molding process. The product comprises a plurality of spaced apart cups which define drainage areas between adjacent base strips to which the cups are connected. The cups have cup walls extending outwardly from a common plane surface and are equipped with a plurality of elongated cup projections which are integral with and extend outwardly from the cup walls.

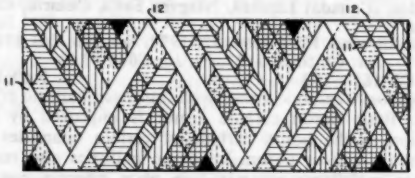
3,729,365
ENDLESS REINFORCEMENT AND METHOD FOR PRODUCING SAME

Charles W. Greene, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Sept. 3, 1970, Ser. No. 69,348

Int. Cl. B32b 5/12

U.S. Cl. 161—57 19 Claims



An endless reinforcement which comprises a unitary strip including a multiplicity of continuous cords, the strip positioned across the width of the reinforcement from one side to the other at an angle to the edges of the reinforcement with successive lengths of the strip being folded with respect to each other at the edges to form a generally zigzag pattern. Also, a method for producing such a reinforcement and a tire therewith as well as the resulting tire.

3,729,366
GLUTAMIC ACID POLYMER ADHERENTS

Yasuo Fujimoto, Machida, Koichi Nagaoka, Tokyo, and Keizo Tatsukawa, Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 776,809, Nov. 18, 1968, and now abandoned. This application Jan. 15, 1971, Ser. No. 106,930

Claims priority, application Japan, Nov. 22, 1967, 42/74,709

Int. Cl. B32b 27/02, 27/34

U.S. Cl. 161—89 20 Claims

A leather-like composite comprising a coating adhesively secured to a substrate, said coating comprising a major amount of a polyglutamic acid and an adhesive containing a diisocyanato-substituted aliphatic carboxylic acid ester as the principal constituent. The adhesive used in the present invention provides a good bond between the polymeric film and the substrate surface, for example, a cotton cloth. The composite exhibits an improved luster and excellent resistance to light, as well as an enhanced elongation.

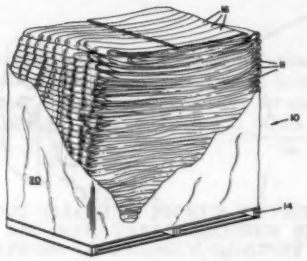
3,729,367
RUBBER PRODUCT FOR TIRE RECAPPING APPARATUS AND METHOD FOR MAKING

Donald G. Shore, Walnut Creek, and Vitalijs Turjanis, Berkeley, Calif., assignors to Oliver Tire & Rubber Company, Oakland, Calif.

Filed June 1, 1971, Ser. No. 148,819

Int. Cl. B65d 75/00; B65b 53/02

U.S. Cl. 161—102 5 Claims



A rubber product for use in a wrap-on type of tire recapping machine comprising an elongated rubber slab of substantially equal width and thickness and partially severed along longitudinal lines that are equally spaced apart to form adjacent strips, with intermittent breakable web portions interconnecting adjacent strips. The slab, with strips connected, is stacked in a series of folds of equal length and surrounded by a cover that provides support as the product is used when the outermost strip is pulled away by a tension that breaks the web portions. The invention also includes a method for making the product that includes the steps of severing the slab to form intermittent longitudinal slits and web portions and stacking the slab in a series of folds.

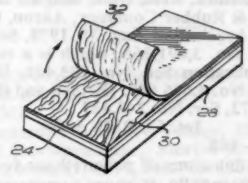
3,729,368
WOOD-PLASTIC SHEET LAMINATE AND METHOD OF MAKING SAME

Robert Edward Ingham and Geoffrey Wilson Deith, Harrogate, England, assignors to R. E. Ingham & Company Limited, Knaresborough, Yorkshire, England

Filed Apr. 21, 1971, Ser. No. 136,059

Int. Cl. B32b 3/00, 31/04

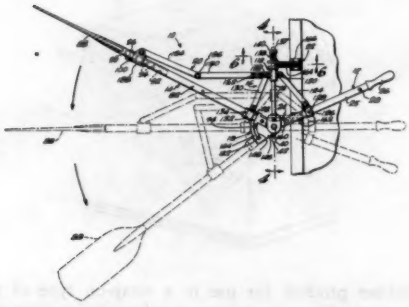
U.S. Cl. 161—119 10 Claims



The production of a laminate comprising a wood veneer and a sheet of plastic material through which the

wood is visible. The wood surface pattern is reproduced exactly in the top surface of the plastic sheet by pressing a foil onto the plastic sheet and heating the foil to cause it to melt and flow locally of the wood pores to deform the plastic sheet onto the pattern of the wood surface. Subsequent removal of the foil reveals a surface having the appearance and feel of the bare wood.

3,729,369
BOW FACING OAR
Waldo Ernest Trull, 3110 S.W. 19th Street, Miami, Fla.
Filed July 9, 1971, Ser. No. 161,123
Int. Cl. B63h *16/12*
U.S. Cl. 115—24.2 **4 Claims**

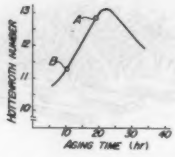


A bow facing oar consisting of an operating arm portion and a blade arm portion and bracket means for attachment to the gunwale of a boat. The adjoining ends of the portions are commonly pivoted on a pin extending vertically through a clevis and a rod, having one end fixed to the clevis, extends horizontally forwardly therefrom to slidably journal a slide block. A first link is pivotally connected between the operating arm and the slide block and a second link is pivotally connected between the slide block and the blade arm whereby pivotal movement of the operating arm is reversely transmitted to the blade arm. Lever means, extending outwardly from the slide block to a point of sliding engagement along the blade arm, is adapted to give the oarsman a force advantage and a cam means is provided to feather the blade at the end of each stroke and to reposition said blade at the beginning of each stroke.

3,729,370
PREPARATION OF VINYL-COATED POLYURETHANE FOAMS
David S. Cobbledick, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
No Drawing. Application Aug. 31, 1970, Ser. No. 68,559, now Patent No. 3,691,265, which is a continuation-in-part of application Ser. No. 783,402, Dec. 12, 1968, now Patent No. 3,586,649. Divided and this application Apr. 12, 1972, Ser. No. 243,457
Int. Cl. B32b *3/26*
U.S. Cl. 161—160 **3 Claims**

Certain combinations of polyurethane foam ingredients which react essentially at room temperature are mixed and poured into vacuum-formed polyvinyl sheeting and allowed to cure thereby producing a polyurethane foam with a strongly adherent polyvinyl coating.

3,729,371
PROCESS FOR PRODUCING HIGHLY CRIMPED VISCOSE RAYON
Tadao Sasakura and Katuo Sakuma, Koriyama, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima-shi, Japan
Filed Mar. 9, 1971, Ser. No. 122,387
Claims priority, application Japan, Sept. 9, 1970, 45/79,168
Int. Cl. D01f *3/10, 3/28*
U.S. Cl. 161—173 **8 Claims**



Highly crimped viscose rayon with improved resistance to water is produced by xanthating with 24 to 32% by weight on cellulose of carbon disulfide, adding to thus obtained viscose a combination of modifiers, spinning ripened viscose having a γ-value of 49 to 37 and a Hottenroth number within 20 to 10 and corresponds to a point on the ascending portion of the Hottenroth number-ripening time curve, said point being within a range where the difference of Hottenroth number at spinning from the Hottenroth number at the peak of said curve is 1 or less.

3,729,372
BORON CARBIDE BALLISTIC ARMOR MODIFIED WITH CHROMIUM AND/OR BORON
Ben Matchen and David Robertson, Niagara Falls, Ontario, Canada, assignors to Norton Research Corporation (Canada) Limited, Niagara Falls, Ontario, Canada
No Drawing. Filed Nov. 22, 1971, Ser. No. 201,114
Int. Cl. B32b *1/12, 17/10;* C04b *41/04*
U.S. Cl. 161—193 **7 Claims**

Composite ceramic armor with improved ballistic properties. Basic boron carbide armor is improved by the addition to the boron carbide of certain quantities of chromium and/or boron. Improved ballistics also result from a multilayer ceramic face plate wherein one or more layers of the above modified boron carbide is combined with a layer of boron carbide to form an integral ceramic face plate.

3,729,373
WEATHER-STABILIZED ASBESTOS ROOFING FELT
Guillermo J. Hildebrandt, Theodore R. Maugel, Albert R. Morgan, and Boris A. Stern, Cincinnati, Ohio, assignors to The Celotex Corporation, Tampa, Fla.
Filed May 6, 1971, Ser. No. 140,755
Int. Cl. D21f *11/04*
U.S. Cl. 162—123 **16 Claims**

There is disclosed an asbestos roofing felt sheet with improved dimensional stability under exposure to weather, and having an increased asphalt saturant-asbestos felt weight ratio, whereby not only weather resistance is greatly improved, but also the speed of machine saturation of the felt with hot liquefied asphalt is greatly increased by virtue of the increased porosity and permeability of the felt. The sheet consists basically of a very open-mesh skeletal structure of mineral wool fibers which are considerably coarser, longer and more rigid than asbestos

fibers, and constitute from about 5% to about 15% by weight of the sheet, with the balance of the fiber content (from about 70% to about 90% by weight) being chrysotile asbestos. A small amount (from about 3% to about 6% by weight) of a modified starch constitutes a binder and increases the tensile strength of the felt, and a small amount (from about 4% to about 8% by weight) of an organic fiber is also used to act as a binder for the fibers, and further to increase the flexibility of the felted sheet. A fractional percentage of a surface active agent may be used to provide smoother machine operation and to yield a more uniform felted sheet.

3,729,374

PRODUCTION OF A FIBROUS WEB BETWEEN AN ENDLESS BELT AND AN ENDLESS PERMEABLE BELT

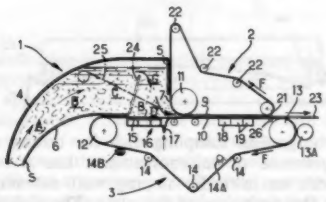
Henri Robert Lissalde, Rouen, France, assignor to Papeteries Navarre, Paris, France

Continuation of abandoned application Ser. No. 705,735, Feb. 15, 1968. This application Feb. 17, 1971, Ser. No. 116,212

Claims priority, application France, Feb. 28, 1967, 96,729

Int. Cl. D21f *1/00, 11/04*

U.S. Cl. 162—203 **5 Claims**



Process for the production of a web or carrier of fibrous elements comprising placing a suspension of fibres in a liquid bath, causing a flow of the suspension through a part of the bath having a progressively decreasing width to concentrate the suspension and causing the concentrated suspension to be advanced between two travelling belts to form the web or carrier.

3,729,375

METER FOR MEASURING BRIGHTNESS OF BLEACHED FIBERS AND CONTROLLING THE BLEACHING PROCESS

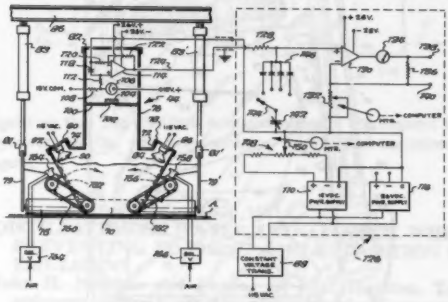
James H. Chappelle, Mobile, Ala., assignor to International Paper Company, New York, N.Y.

Continuation-in-part of application Ser. No. 31,857, May 1, 1970, now Patent No. 3,607,623, which is a continuation of application Ser. No. 535,402, Mar. 18, 1966, now abandoned. This application July 29, 1971, Ser. No. 167,407

Int. Cl. D21c *7/12;* **G01n** *21/30, 21/48*

U.S. Cl. 162—252 **9 Claims**

Apparatus for continuously controlling the bleaching of fibers and for continuously measuring and recording the brightness of light reflected from the bleached fibers comprising a bleaching tank, pipe lines for feeding fibers to and from the tank, drums for forming the fibers leaving and entering the tank into mats on the drums, and a first and a second photoelectric measuring apparatus supported by rollers on the fiber mats on the first and second drums, respectively, for producing first and second control signals representative of the separate brightnesses of the fiber mats. Motor controlled valves responsive to the first control signal regulate the flow of bleaching agent into the tank as well as the temperature of the fibers entering the tank. A computerized controller compares the value of the second control signal, representative of the brightness of fibers leaving the tank, with a predetermined standard value and modifies the response of the motor controlled valves to the first contol signal



in accordance with changes in the comparative value. Two reflectance standardization plates are mounted in at least one of the photoelectric measuring devices for calibrating the device over the range of brightness values which it must measure.

3,729,376

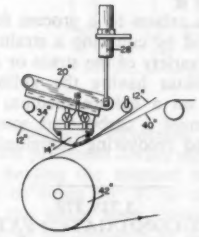
PAPERMAKING MACHINE PICKUP DEVICE INCLUDING AN INFLATABLE MEMBER PRESSING AN APRON UNIFORMLY AGAINST THE WEB

Samuel S. Stevens, Box 218, Erving, Mass. 01344

Filed Oct. 23, 1970, Ser. No. 83,347

Int. Cl. D21f *2/00*

U.S. Cl. 162—306 **7 Claims**



A device for removing or couching a fibrous web from either the forming wire of a Fourdrinier machine or the surface of a forming roll (or cylinder) in the case of a cylinder type machine which includes a smooth apron which contacts the web and an inflatable, elastomeric, hollow member which presses the apron against the web in a uniform fashion. The hollow member can be filled to an adjustable level with liquids or gases.

3,729,377

ENVELOPE OXYGENATOR FOR BLOOD HAVING INFLATABLE PORTIONS AND PROCESS OF USING SAME

Ronald J. Leonard, Elk Grove Village, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

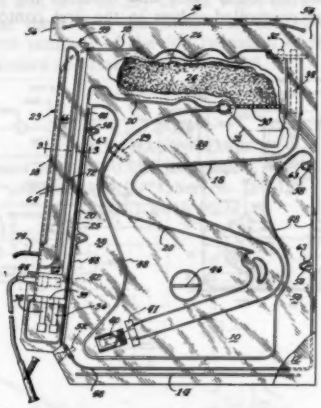
Filed Mar. 12, 1971, Ser. No. 123,518

Int. Cl. A61m *1/03;* **C12k** *9/00*

U.S. Cl. 195—1.8 **12 Claims**

A blood oxygenator which defines a flow passage, and having means for introducing a stream of blood into one

end of the flow passage and means for removing blood from the other end. The oxygenator has means defining a fluid pressurizable section to provide dimensional stability thereto, for example, to control the cross sectional area of the oxygenating portion of the flow passage or to make the oxygenator self-supporting.



3,729,378
PROCESS FOR THE PRODUCTION OF AERUGINOIC ACID
Tomio Imai, Tokyo, Masao Takahashi, Matsudo, Nobuyuki Seki, Soka, and Yoshio Irie, Matsudo, Japan, assignors to Godo Shusei Kabushiki Kaisha, Tokyo, Japan
Filed June 1, 1970, Ser. No. 42,121
Claims priority, application Japan, Sept. 16, 1969, 44/72,757
Int. Cl. C12d *1/00*
U.S. Cl. 195—28 R **5 Claims**

This invention relates to a process for the production of aeruginoic acid by culturing a strain of *Pseudomonas aeruginosa* or a variety of the strain or a variety of *Pseudomonas aeruginosa* having the ability for producing aeruginoic acid on a culture medium comprising as a principal component a carboneous source to produce a broth culture and recovering aeruginoic acid from said broth culture.

3,729,379
HYDROXY-CONJUGATED FATTY ACIDS
Edward A. Emken, Peoria, Ill., assignor to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Aug. 31, 1971, Ser. No. 176,753
Int. Cl. C12b *1/00*
U.S. Cl. 195—30 **3 Claims**

Method for producing hydroxy-conjugated fatty acids from linoleic acid soaps dispersed in an aqueous medium containing dimethyl sulfoxide with the enzyme soybean lipoxygenase.

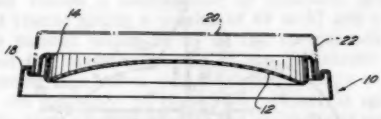
3,729,380
PROCESS FOR PRODUCING LOW MOLECULAR AMYLOSE ON A COMMERCIAL BASIS
Kaname Sugimoto and Mikihiko Yoshida, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan
Filed Apr. 14, 1970, Ser. No. 28,383
Claims priority, application Japan, Apr. 15, 1969, 44/29,170
Int. Cl. C13l *1/08*
U.S. Cl. 195—31 R **14 Claims**

Process for producing a relatively low molecular amylose having straight chain structure on a commercial basis by selectively hydrolyzing with α-1,6-glucosidase only the bonds of the branched parts in amylopectin molecules contained in starches which are high molecular polymers of glucose.

3,729,381
PROCESS FOR PRODUCING L-METHIONINE
Kiyoshi Nakayama, Sagamihara, and Kazumi Araki, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Filed Jan. 25, 1971, Ser. No. 109,609
Claims priority, application Japan, Feb. 6, 1970, 45/10,005
Int. Cl. C12d *13/06*
U.S. Cl. 195—96 **5 Claims**

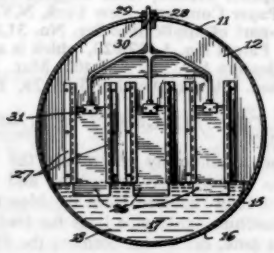
L-methionine is produced by fermentation of an aqueous nutrient medium with an L-methionine-producing certain type mutant strain of coryneform glutamic acid-producing bacteria.

3,729,382
MICROORGANISM SAMPLING DISH
George Raymond Shaffer, Townson, and Eugene M. Roz, Middle River, Md., assignors to Becton, Dickinson and Company, Rutherford, N.J.
Filed Dec. 9, 1970, Ser. No. 96,306
Int. Cl. C12b *1/00*
U.S. Cl. 195—139 **3 Claims**



A microorganism sampling dish for testing a surface for the presence of microorganisms has a base plate formed with an inwardly sloping wall extending therearound at the periphery of the plate. The dish is formed from flexible material and has a convex bottom. A channel is spaced about the dish wall for supporting a cover. A culture medium can be disposed in the dish and a cover may be provided which bridges the dish wall and culture medium and rests in the channel.

3,729,383
FLASH EVAPORATOR STRUCTURE
Richard W. Goeldner, Brookfield, Wis., assignor to Aqua-Chem, Inc.
Continuation-in-part of applications Ser. No. 94,879, Mar. 10, 1961, and Ser. No. 267,074, Mar. 14, 1963. This application Jan. 7, 1966, Ser. No. 519,355
Int. Cl. B01d *3/02*
U.S. Cl. 202—173 **13 Claims**



A horizontally arranged multistage flash evaporator wherein a tubular vessel is divided into a plurality of flash chambers by transverse partitions in which the partitions at their lower end provide a passage for feedwater from chamber to chamber, and in which means are provided for controlling the flow of feedwater between chambers

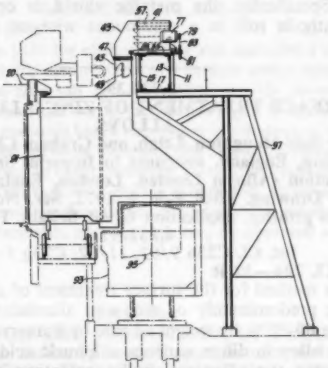
to maintain a desired level of feedwater liquid to effect a water seal between chambers.

3,729,384

FLEXIBLE BELT MOVABLE HOOD

Raymond C. Kinzler, Carnegie, and Robert M. Staats, Beaver Falls, both of Pa., assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jan. 21, 1971, Ser. No. 108,507
Int. Cl. C10b *27/00*
U.S. Cl. 202—263 **6 Claims**



A gas collecting main, extruding coextensively of a coke oven battery, has a flexible, heat-resistant web closing one side. An apparatus that is mounted to, or that is movable synchronously with, a coke guide cooperates with the flexible web to provide an opening in the collecting main wherever the apparatus stops so that gases emitted from a coking chamber when the doors are removed and while pushing coke, are directed into the collecting main only through such opening.

3,729,385

INHIBITION OF ETHER DECOMPOSITION DURING DISTILLATION BY QUINOLINE ADDITION

Anthony L. Tumolo, Havertown, Pa., assignor to Sun Research and Development Co., Philadelphia, Pa.

Continuation-in-part of Ser. No. 807,995, March 17, 1969, abandoned. This application July 29, 1971, Ser. No. 167,482
Int. Cl. C07c *41/12*
U.S. Cl. 203—6 **2 Claims**

Propylene trimer methyl ether is of interest as a non-air polluting solvent; however, in the production of the ether, there is a major proportion of unreacted propylene trimer from which the ether must be separated. Distilling the propylene trimer methyl ether out of the ether-trimer mixture results in up to 30 percent degradation of the ether. By adding 0.1–10 weight percent quinoline to the distillation mixture, however, reduces degradation loss to less than 5 percent.

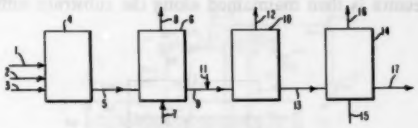
3,729,386

ORGANIC ISOCYANATE RECOVERY PROCESS BY DISTILLATION WITH A TAR-THINNING AGENT AND A STRIPPING AGENT

Carl F. Irwin, New Castle, Del., and William T. Muncaster, Woodstown, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 39,779, May 22, 1970, abandoned. This application Jan. 4, 1971, Ser. No. 103,734
Int. Cl. C07c *119/04*; B01d *3/34*
U.S. Cl. 203—8 **8 Claims**

Organic isocyanates can be recovered with beneficial ease and efficiency from crude isocyanate compositions containing tar (residue component) and other contaminants (e.g., compositions as obtained by phosgenation of an amine in a solvent) by a process which includes adding a suitable amount of a useful tar-thinning agent and distilling the resulting mixture either batchwise or continuously in the presence of a stripping



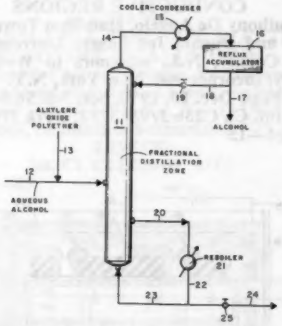
agent so that the distillate contains most of the organic isocyanate and the still heel contains the tar and tar-thinning agent.

3,729,387

DISTILLATION OF WATER AND ALCOHOL WHILE PREVENTING FOAMING AND FORMATION OF EMULSIONS

John H. Naschke and Eugene O. Keil, Houston, Tex., assignors to Esso Research and Engineering Company

Original application Feb. 6, 1970, Ser. No. 9,440, now abandoned. Divided and this application July 8, 1971, Ser. No. 160,895
Int. Cl. C07c *29/26*
U.S. Cl. 203—19 **5 Claims**



Foaming and emulsion formation in an aqueous alcohol solution are prevented during separation of water and alcohol by heating the solution to a temperature within the range of about 90° F. to about 350° F. at pressures within the range from about atmospheric to about 300 p.s.i.g. in the presence of a small but effective amount of an alkylene oxide polyether containing about 25 to about 175 moles of propylene oxide and about 5 to about 235 moles of ethylene oxide and having a molecular weight of about 3,000 to about 10,000, the propylene oxide being in a major amount and sufficient of the combined oxides being employed to provide a molecular weight in the range given.

3,729,388

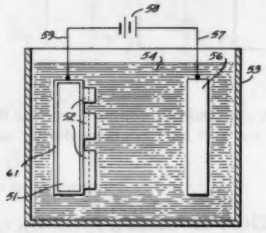
METHOD OF PREPARING AT LEAST ONE CONDUCTIVE FORM

Michael Anthony De Angelo, Hamilton Township, Mercer County, and Donald Jex Sharp, Lawrence Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,945
Int. Cl. C23b *7/08, 5/48*; B01k *1/00*
U.S. Cl. 204—3 **44 Claims**

A method of preparing conductive patterns comprises depositing a thin metallic form or pattern on a base material comprising a valve metal. The valve metal base with the deposited pattern thereon is then subjected to an

electrolytic plating treatment in which only the pattern and not the base is electroplated and built up to a desired thickness. A background support or substrate, having at least one surface rendered adhesive, may then be contacted with the built-up pattern at the adhesive surface. Pressure is then maintained along the substrate sufficient



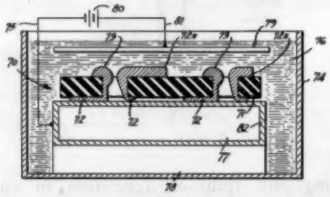
to (1) insure the subsequent removal of the pattern from the base when the substrate is removed from contact therewith and (2) insure the temporary retention of the patterns on the substrate. The retention of the patterns may then be rendered permanent.

3,729,389

METHOD OF ELECTROPLATING DISCRETE CONDUCTIVE REGIONS

Michael Anthony De Angelo, Hamilton Township, Mercer County, and Donald Jex Sharp, Lawrence Township, Mercer County, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,946
Int. Cl. C23b *5/48, 5/58;* **B01k** *3/04*
U.S. Cl. 204—15 **34 Claims**



A method of electrodepositing a metal coating on discrete conductive portions is described. The method comprises immersing the discrete conductive portions in a standard metal plating bath containing a suitable anode. The discrete portions are then contacted with a cathode fabricated of a valve metal material, which material is capable of functioning as an electrode but which is passive to metal deposition upon its own surfaces. A current density is then maintained within the plating solution which is sufficient to metal plate the discrete portions to a desired thickness.

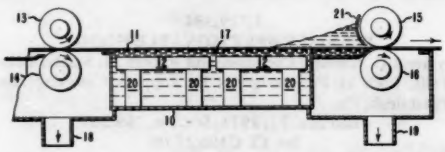
3,729,390

ELECTROTINNING PROCESS TO PREVENT PLATING ON THE CATHODE CONTACT ROLL

Owen Bertwell Mathre, Wilmington, and Donald Arthur Swalheim, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Application Jan. 15, 1968, Ser. No. 703,830, which is a continuation-in-part of application Ser. No. 685,452, Nov. 24, 1967, both now abandoned. Divided and this application Feb. 11, 1971, Ser. No. 114,664
Int. Cl. C23b *5/14, 5/58, 5/68*
U.S. Cl. 204—28 **3 Claims**

In an electrotinning process, a metallic shield is positioned near the cathode contact roll and maintained at a slightly more negative (more cathodic) potential than the contact roll so as to prevent plating on the contact



roll. Specifically, the metallic shield is operated near the cathode roll in a continuous wire or strip plating unit.

3,729,391

SURFACE TREATMENT OF ZINC/ALUMINIUM ALLOYS

Roger Reid Houghton, Leigh, and Graham Charles Wood, Bolton, England, assignors to Imperial Smelting Corporation (Alloys) Limited, London, England

No Drawing. Filed Feb. 9, 1972, Ser. No. 224,979
Claims priority, application Great Britain, Feb. 9, 1971, 4,231/71
Int. Cl. C23b *9/02, 11/02;* **C23g** *5/00*
U.S. Cl. 204—32 R **8 Claims**

In a method for the surface treatment of an alloy consisting predominantly of zinc and aluminium, and containing 60–85% by weight of zinc by immersing a surface of the alloy in dilute aqueous sulphuric acid, comprising subjecting the alloy to anodic oxidation at a current density of from 50 to 200 milliamperes per square centimetre of surface. The alloy may include up to 0.5% by weight of copper or magnesium as a third metal.

3,729,392

PLATING OF TITANIUM WITH CHROMIUM

John Edwin Bride, Mentor, Ohio, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Feb. 19, 1971, Ser. No. 117,101
Int. Cl. C23b *5/06*
U.S. Cl. 204—51 **3 Claims**

Titanium or titanium-base alloys can be plated with a semi-bright chromium plate of good appearance and durability. The titanium is plated by electrodeposition from a plating medium containing a solution of a particular chromic-compound. More especially the bath contains a solution of a complex, water-soluble trivalent chromic compound containing particular carboxylic acid constituents and halogen. Plated titanium articles can be used alone and exhibit a decorative surface, or they may be used as a base for subsequent coating operation.

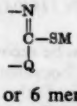
3,729,393

ELECTRODEPOSITION OF COPPER

Derek Martin Lyde, Stourbridge, England, assignor to Albright & Wilson Limited, Oldbury, Worcestershire, England

No Drawing. Original application Apr. 25, 1968, Ser. No. 724,225. Divided and this application Apr. 7, 1971, Ser. No. 132,236
Claims priority, application Great Britain, May 1, 1967, 19,989/67
Int. Cl. C23b *5/18*
U.S. Cl. 204—52 R **22 Claims**

Brightening compositions for copper pyrophosphate electroplating solutions comprising a heterocyclic brightener of the type which consists of a



group contained in a 5 or 6 membered heterocyclic ring system where Q represents nitrogen or sulphur and M is

hydrogen or a cation (such as mercapto thiazoles, thiadiazoles or pyrimidines), or a precursor thereof; and an auxiliary brightener selected from aryl or alkaryl-sulphonic acids having at least 7 carbon atoms.

3,729,394
COMPOSITION AND METHOD FOR ELECTRODEPOSITION OF ZINC

Grace F. Hsu, Somers, and Merton M. Beckwith, Rockville, both of Conn., assignors to Conversion Chemical Corporation, Rockville, Conn.

Filed April 17, 1972, Ser. No. 244,870
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—55 R **31 Claims**

An aqueous bath for electroplating zinc includes a soluble zinc salt, a soluble electrolyte and a surface active agent formulation. The zinc salt and electrolyte provide ammonium and chloride ions and the surface active agent formulation is based upon a nonionic block copolymer of ethylene oxide and propylene oxide. In some instances, the block copolymer may be utilized alone, in other instances, it is used in combination with an N-(alkyl sulfonyl) glycine compound. Other surface active agents and brighteners are advantageously employed in connection therewith, and the bath may be operated at a pH of 3.0–6.3.

3,729,395
PROCESS FOR THE PRODUCTION OF FLUORINE

Michel Caron, Bollene, Claude Coquet, Soucieu en Jarrest, Philippe Coste, Paris, and Marcel Rey, Versailles, France, assignors to Societe des Usines Chimiques de Pierrelatte, Paris, France

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,530
Claims priority, application France, Mar. 12, 1970, 7008897
Int. Cl. C01b *7/20, 11/26*
U.S. Cl. 204—59 R **13 Claims**

This invention relates to a process for the production of fluorine containing less than 6% HF by volume which comprises subjecting to electrolysis an anhydrous mixture of NH_4F and HF.

3,729,396
RHODIUM PLATING COMPOSITION AND METHOD FOR PLATING RHODIUM

Myron E. Browning and Hamilton M. Solidum, Woodbury, Conn., assignors to American Chemical & Refining Company, Incorporated, Waterbury, Conn.

No Drawing. Filed Aug. 30, 1971, Ser. No. 176,235
Int. Cl. C23b *5/24*
U.S. Cl. 204—47 **7 Claims**

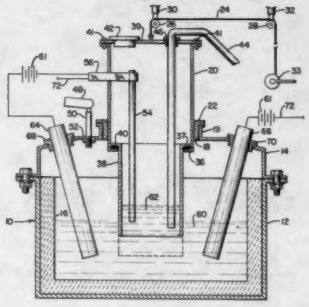
An aqueous acid bath for producing bright rhodium electrodeposits having low internal stress contains rhodium ion, aluminum ion sulfate radical and a polycarboxylic organic acid. Preferably, it also contains a small amount of the phosphate radical.

3,729,397
METHOD FOR THE RECOVERY OF RARE EARTH METAL ALLOYS

James R. Goldsmith, Upper St. Clair, Pa., Paul R. Kruesi, Golden, Colo., and Nathaniel Henri Masarky, Tenafly, N.J., assignors to Molybdenum Corporation of America, Louviers, Colo.

Filed Sept. 25, 1970, Ser. No. 75,346
Int. Cl. C22d *3/00, 3/08, 3/20*
U.S. Cl. 204—64 R **24 Claims**

A method for electrowinning of magnesium-rare earth metal alloys from fused salt baths having melting points and specific gravities above that of magnesium which comprises adding the rare earth metal oxide as feed material to a fused salt bath comprising the fluoride of the rare earth metal and an alkali metal fluoride with the optional inclusion of an alkaline earth metal fluoride, and electrolyzing the electrolyte mixture using carbon anodes and as a cathode, molten magnesium which floats on the electrolyte mixture and is confined near the anodes

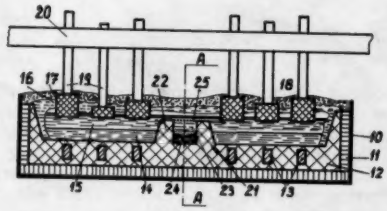


in a boron nitride sleeve and maintained as a cathode through a molybdenum connector extending into the molten magnesium but not into the molten electrolyte mixture.

3,729,398
PROCESS AND CELL FOR THE ELECTROLYTIC RECOVERY OF ALUMINUM

Wolfgang Schmidt-Hatting, Chippis, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Feb. 9, 1971, Ser. No. 113,960
Claims priority, application Switzerland, Feb. 17, 1970, 2,295/70
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—67 **3 Claims**



Process for the electrolytic recovery of aluminum from a fused alumina-containing bath of alkali aluminum fluoride in which the fluoride melt is kept in direct contact with a melt consisting of electrolyte highly concentrated in alumina and separated from the liquid cathodic aluminum. The electrolytic cell used therefor comprises one or more troughs resting on its bottom and provided for the reception of the highly concentrated electrolyte.

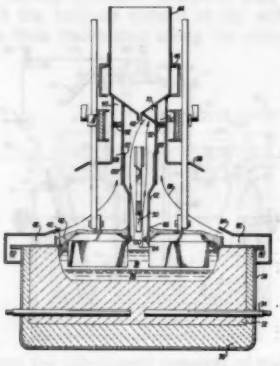
3,729,399
GAS CONTROL METHOD AND APPARATUS

Robert M. Kibby, Florence, Ala., assignor to Reynolds Metals Company, Richmond, Va.

Filed July 13, 1971, Ser. No. 162,198
Int. Cl. C22d *3/12*
U.S. Cl. 204—67 **19 Claims**

The crust of an alumina reduction cell is periodically pierced and concentrated cell fumes are directed to a concentrated-fume collector for passage to a concen-

trated-fume processor. A variable output blower directs air upwardly over the cell for directing dilute fumes toward a dilute-fume collector for passage to a dilute-fume processor.



3,729,400

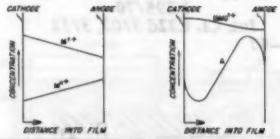
METHOD OF SEPARATING MIXTURES OF GASES

William J. Ward III, Schenectady, N.Y., assignor to General Electric Company

Original application Feb. 27, 1969, Ser. No. 803,019, now Patent No. 3,676,220. Divided and this application Dec. 10, 1970, Ser. No. 96,770

Int. Cl. H01m *27/02;* **B01d** *57/00;* **C01b** *21/36*

U.S. Cl. 204—128 **6 Claims**



A confined liquid membrane having an electrode in contact with each surface thereof is provided with a concentration of a non-volatile transporting specie in solution therein, which transporting specie can be oxidized or reduced from a first to a second valence state. The transporting specie must be reactive with a specific gas in at least one of the multiple valence states. If the transporting specie is reactive with the gas in both valence states, such reactions must have different equilibrium constants. By bringing the specific gas into contact with one surface of such a liquid membrane and applying an electrical potential across the electrodes on each side thereof, the specific gas may be pumped through the membrane against a concentration gradient. Similarly, while a concentration gradient in the specific gas exists across the structure described, an electrical potential difference develops across the film and the electrodes.

3,729,401

CALCIUM ION MEASURING ELECTRODE

Richard Elmond Cosgrove II, Leucadia, and Charles Arnold Mask, Garden Grove, Calif., assignors to Beckman Instruments, Inc.

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,981

Int. Cl. G01n *27/30*

U.S. Cl. 204—195 L **4 Claims**

An electrode for measuring the concentration of calcium ions in an aqueous solution comprising a substantially water immiscible, liquid organic phase containing an ion exchange material selected from the group consisting of calcium bis [para(1,1,3,3 tetramethyl butyl)-phenyl] phosphate, calcium bis (para-t-butyl phenyl) phosphate, bis [para (1,1,3,3 tetramethyl butyl)-phenyl] phosphoric acid, and bis (para-t-butyl phenyl (phosphoric acid. Means are provided for containing the organic phase and providing an interface for ion exchange contact between the organic phase and the aqueous solution and an internal reference electrode element is also provided in electrical contact with the organic phase.

2,729,402

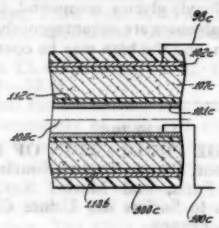
ELECTROSTATIC FILTER FOR CLEANING DIELECTRIC FLUIDS

Edward A. Griswold, 2072 E. Galbreth Road, Pasadena, Calif. 91104

Continuation-in-part of application Ser. No. 538,275, Mar. 29, 1966, now Patent No. 3,544,441. This application Nov. 27, 1970, Ser. No. 93,363

Int. Cl. B01d *13/02;* **B01k** *1/00;* **B03c** *5/00*

U.S. Cl. 204—302 **10 Claims**



Apparatus for reducing or eliminating destructive electrical arcing between inner and outer electrodes includes an elongated inner electrode element; an elongated outer shell element spaced from and containing the inner electrode, whereby an electric field may be established between the elements; and porous media in the space between the elements to trap particles migrating in the direction of the field. A dielectric coating in the space between the electrodes may be applicable to the element, elements and/or media, for chemical and electrical modification of the surfaces so coated.

3,729,403

HIGH ENERGY CURABLE LIQUID POLYENE-POLYTHIOL POLYMER COMPOSITION

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Application June 23, 1970, Ser. No. 49,191, which is a continuation-in-part of abandoned application Ser. No. 617,801, Feb. 23, 1967, which in turn is a continuation-in-part of abandoned application Ser. No. 567,841, July 26, 1966. Divided and this application June 25, 1971, Ser. No. 156,971

Int. Cl. C08c *11/54;* **C08d** *1/00;* **C08f** *1/16*

U.S. Cl. 204—159.14 **17 Claims**

The invention disclosed is for a new high energy curable liquid polymer composition which includes a liquid polyene component having a molecule containing at least two unsaturated carbon-to-carbon bonds disposed at terminal positions on a main chain backbone of the molecule, and a polythiol component having a molecule containing a multiplicity of pendant or terminally positioned —SH functional groups per average molecule. The high energy curable liquid polymer composition upon curing in the presence of high energy irradiation forms odorless, solid, elastomeric products which may serve as sealants, coatings, adhesives, and molded articles.

3,729,404

PHOTOCURABLE POLYENE-POLYTHIOL POLYMERS USING A PHOSPHINE PLUS AN ADDITIONAL SENSITIZER

Charles Robert Morgan, Silver Spring, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Sept. 10, 1971, Ser. No. 179,567
Int. Cl. C08d *1/00;* C08f *1/16;* C08c *11/54*
U.S. Cl. 204—159.15 6 Claims

This invention relates to accelerated curing of a composition comprising a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule and a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than four, in the presence of a photosensitizer and a novel class of synergistic agents from the group consisting of (1) phosphines of the formula

wherein R_1, R_2 and R_3 are each independently selected from the group consisting of alkyl, aryl, alkaryl and alkoxy and (2) phosphites of the formula

wherein R_4, R_5 and R_6 are each independently selected from the group consisting of alkyl, aryl and alkaryl, said alkyls containing 1–12 carbon atoms.

The curing takes place in the presence of a free radical generator, preferably actinic radiation, e.g., UV light.

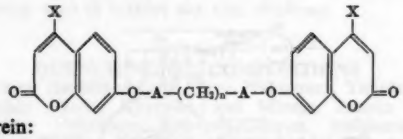
3,729,405

PHOTOCYCLOADDITION POLYMERISATION OF BIS-COUMARINS

Frans Carolus De Schrijver, Leuven, and Luc Leenders, Hasselt, Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

No Drawing. Filed June 29, 1972, Ser. No. 267,482
Claims priority, application Great Britain, July 12, 1971, 32,613/71
Int. Cl. C08d *1/00;* C08f *1/16*
U.S. Cl. 204—159.23 10 Claims

Photocycloaddition polymerization products are obtained by irradiation with ultraviolet light, having a wavelength above 310 nm., and in the presence of a photosensitizer, of bis-coumarines of the formula:



wherein:

A represents a carbonyl group or a chemical bond,
X represents an alkyl group (1–4 C), and
n is an integer from 1 to 20.

Upon exposure of the photocycloaddition polymerization products with ultraviolet light of 310 nm. the monomeric bis-coumarines are reformed.

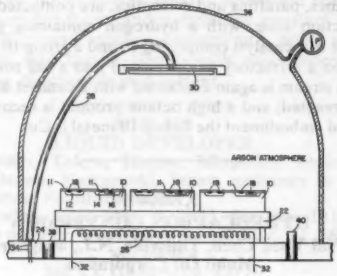
3,729,406

METHOD OF ADHERING TUNGSTEN TO GLASS AND FOR PROVIDING A TUNGSTEN-GOLD INTERCONNECT LAYER

John Francis Osborne, Tempe, and Hans Joachim Pille, Mesa, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 10, 1971, Ser. No. 141,645
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 4 Claims

In building semiconductor integrated circuits, it is often necessary to adhere a layer of electrically conductive connections to an insulating layer. The electrically conductive connections comprise the connections between the several circuit elements built into the integrated circuit. For many reasons, the circuit connections are of gold and the insulating layer is of SiO_2 (glass). However, gold does not adhere with sufficient tenacity to glass, whereby, an intermediate layer of tungsten is used between the glass and the gold. It has been found that the tungsten does not adhere sufficiently tightly to the glass in accordance with prior art processes to produce high quality integrated circuits. This poor adherence is due to the fact that the



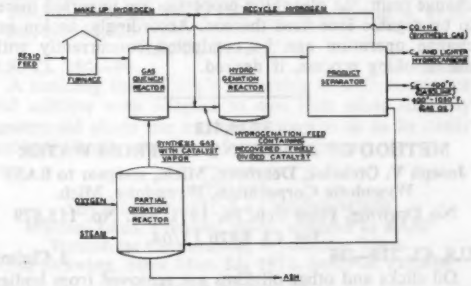
tungsten which is sputtered on the glass in an argon atmosphere contains large amounts of argon and other gases. Furthermore, the formation of tungsten oxide tends to prevent adherence of the tungsten to the glass. A method of depositing an adherent layer of tungsten on glass is disclosed in which the oxygen in the argon atmosphere is reduced below the level that causes the production of tungsten oxide and the argon entrapped in the tungsten is greatly reduced. A greatly improved method of producing a tungsten-gold circuit element interconnection layer including the so deposited tungsten is also disclosed.

3,729,407

HYDROGENATION PROCESS UTILIZING RECOVERED CATALYST

Frederick W. Camp, West Chester; Frederic S. Eisen, Broomall; James Van Dyck Fear, West Chester, and Merritt C. Kirk, Jr., Thornton, all of Pa., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Filed April 5, 1971, Ser. No. 131,336
Int. Cl. C10g *1/06*
U.S. Cl. 208—10 5 Claims



In a hydrogenation process where molybdenum oxide or sulfide is used as catalyst, the improvement of condensing

vapors of recovered catalyst in the feed stream to the hydrogenation unit.

3,729,408

CATALYTIC REFORMING PROCESS

James L. Carter, Chatham, and John H. Sinfelt, Berkeley Heights, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 28, 1970, Ser. No. 102,208
Int. Cl. C10g 35/08; B01j 11/08, 11/22
U.S. Cl. 208—65 14 Claims

A catalytic reforming process wherein naphtha feed streams, boiling from about 80° to 450° F, and comprising naphthenes, paraffins and aromatics, are contacted, in an initial reaction zone, with a hydrogen containing gas, in the presence of a catalyst comprising Pt and a group IB metal supported on a refractory oxide; passed into a tail zone wherein the feed stream is again contacted with a catalyst and thereby further reacted; and a high octane product is recovered. In a preferred embodiment the Group IB metal is Cu.

3,729,409

HYDROCARBON CONVERSION

Nai Yuen Chen, Titusville, N.J., assignor to Mobil Oil Corporation

Filed Dec. 24, 1970, Ser. No. 101,231
Int. Cl. C10g 35/06
U.S. Cl. 208—135 12 Claims

This disclosure relates to a method of improving the yield-octane number relationship of a reformate or reformer effluent by contacting the same in the presence of hydrogen with a family of crystalline aluminosilicate zeolites identified as ZSM–5 type.

3,729,410

DE-OILING OF POLLUTED WATERS

Albert Abadie, Argeles Gazost, and Henri Roques, Portet-sur-Garonne, France, assignors to Anvar (Agence Nationale de Valorisation de la Recherche), Courvevoie, France

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,695
Claims priority, application France, Mar. 3, 1970, 7007641
Int. Cl. E02b 15/04
U.S. Cl. 210—32 23 Claims

A process for de-oiling polluted waters which comprises contacting the oil-containing water with an oleophilic resin having a high surface area, for example, in the form of a powder or small spherules or granules, and removing the treated water from the resin, after several stages as necessary if a particular degree of de-oiling is desired. The oleophilic resin can be an ion exchange resin; the oleophilic properties are imparted thereto by organic ions fixed thereon. Accordingly, an ion exchange operation can be conducted concurrently with the de-oiling process, if desired.

3,729,411

METHOD OF REMOVING OIL FROM WATER

Joseph V. Otrhalek, Dearborn, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,879
Int. Cl. E02b 15/04
U.S. Cl. 210—36 3 Claims

Oil slicks and other oil films are removed from bodies of water by casting onto the water a silicone-treated expanded volcanic ash containing, optionally, a thickening agent, and, thereafter, removing the oil absorbed composition from the water.

3,729,412

SLUDGE CONCENTRATION

Robert Carl MacKenzie, Sarnia, Ontario, Canada, assignor to Polymer Corporation Limited, Sarnia, Ontario, Canada

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,351
Claims priority, application Canada, Aug. 31, 1970, 91,963
Int. Cl. C02b 1/20
U.S. Cl. 210—52 10 Claims

A process is provided for the dewatering of a sludge derived from the treatment of an industrial waste water stream, wherein the sludge is mixed with a latex comprising rubbery polymer and, on addition of a coagulating agent, a coagulum is formed which is separable from the aqueous phase.

3,729,413

PROCESS FOR THE REMOVAL OF CYANIDE FROM SEWAGE BY MEANS OF FORMALDEHYDE

Zoltán Csürös, József Petró, Zsigmond Dusza, Zsuzsa Simó nee Bárczy, István Turcsán, and József Vaczulin, Budapest, Hungary, assignors to NIKEX Nehezipari Kulkereskedelmi Vallalat, Budapest, Hungary

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,350
Int. Cl. C22c 5/02
U.S. Cl. 210—59 6 Claims

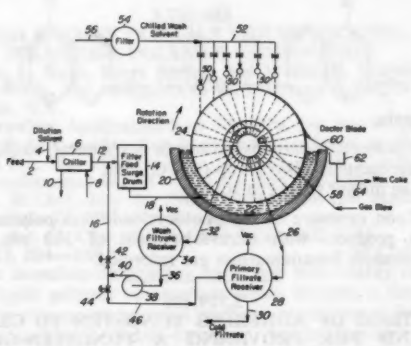
Sewage is decyanized with formaldehyde and the formed product recovered. The essence of the method is that a formaldehyde solution of at least pH 8 alkalinity is added under intensive agitation to the sewage, the solution allowed to stand at temperatures ranging from room temperature to 100° C. for 50–1 hours and heated or boiled. To improve the economy of the method in given cases the ammonia is absorbed and the formed glycolic acid recovered from the solution. The method can be applied to the detoxication of both dilute and concentrated cyanide-containing sewage.

3,729,414

DEWAXING AND DEOILING PROCESS

Robert E. Harris, and William R. Moseley, both of Beaumont, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,930
Int. Cl. B01d 37/00
U.S. Cl. 210—66 3 Claims



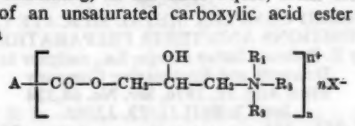
In a rotary filter dewaxing-deoiling process, the method and apparatus for improving the deoiling of the wax cake is described, characterized by utilizing a plurality of transverse solvent distributor pipes each of which dispense a relatively dense transverse curtain of solvent droplets on the wax cake thereby providing areas of solvent flooding interspaced with areas of considerably reduced solvent concentration.

3,729,415
LUBRICATING COMPOSITION
William J. Davis, Wyomissing, and Richard C. Gilles, Sinking Spring, both of Pa., assignors to Joseph E. Ferri, Schillington, Pa.
Continuation of Ser. No. 771,273, Oct. 28, 1968, Pat. No. 3,547,819, which is a continuation of Ser. No. 668,692, Sept. 18, 1967, abandoned, which is a continuation of Ser. No. 486,214, Sept. 9, 1965, abandoned, which is a continuation-in-part of Ser. No. 363,294, April 28, 1964, abandoned. This application Dec. 11, 1970, Ser. No. 97,294
Int. Cl. C10m *1/18, 1/10, 5/08*
U.S. Cl. 252—25 10 Claims

Lubricating composition comprising a hydrocarbon oil and polyethylene having an average molecular weight within the range of from over 1 million to about 5 million, the composition being of various forms, namely a fluid-like gel, a jelly-like gel and a rigid gel, depending on the amount of polyethylene present in the composition.

3,729,416
LIQUID SOFTENING RINSING AGENT COMPOSITIONS
Jürgen Brüning, Luchtringen, Hans-Werner Eckert, Dusseldorf, and Arnold Heins, Hilden, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany
No Drawing. Filed May 24, 1971, Ser. No. 146,515
Claims priority, application Germany, May 27, 1970, P 20 25 945.4
Int. Cl. D06m *13/46*
U.S. Cl. 252—8.8 4 Claims

Liquid softening rinsing agent compositions for washed textiles containing, in the rinse liquid, from 0.1 to 2.0 gm./l. of an unsaturated carboxylic acid ester of the formula



wherein R_1 and R_2 are selected from the group consisting of alkyl and alkenyl having from 10 to 24 carbon atoms, R_3 is alkyl having 1 to 4 carbon atoms, A is selected from the group consisting of alkenyl and alkenylene having from 2 to 5 carbon atoms, X is an anion selected from the group consisting of halide and the anion of an organic, non-surface-active acid and *n* is an integer of 1 or 2. Liquid compositions containing from 1 to 25% by wegiht of said carboxylic acid esters and the process of softening washed textiles are also disclosed.

3,729,417
QUENCHING OIL COMPOSITIONS
Kametaro Hashimoto and Hiroo Nakamura, Toyota-shi, Toshio Okada, Kyoto-fu, and Misugu Tanaka and Kazuto Fukuhara, Kobe-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, and Nippon Grease Co., Ltd., Dojima, Kita-ku, Osaka-shi, Japan
No Drawing. Filed Feb. 12, 1970, Ser. No. 10,990
Claims priority, application Japan, Feb. 14, 1969, 44/11,199
Int. Cl. C10m *1/48*
U.S. Cl. 252—46.6 3 Claims

Quenching oil composition of the invention comprises mineral quenching oil containing a specific compound belonging to (1) aliphatic acids or derivatives thereof, (2) phosphites, (3) thiophosphites, (4) phosphates, (5) zinc dialkyl dithiophosphates, (6) disulfides, (7) tetraalkylthiuram sulfides, (8) dithiocarbamates or (9) mercaptanes, said compound being contained in the range of 0.05 to 5 weight parts, based on 100 weight parts of the mineral quenching oil. The present quenching oil compositions are capable of quenching metals and, at the same time, imparting lubricating property to the metals quenched therewith.

3,729,418
LIQUID DEVELOPER FOR ELECTROSTATIC LATENT IMAGE
Hazime Machida, Akira Tsurugi, and Zenjiro Okuno, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
No Drawing. Continuation of abandoned application Ser. No. 831,195, June 6, 1969. This application July 12, 1971, Ser. No. 161,892
Claims priority, application Japan, June 14, 1968, 43/40,584
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 1 Claim

A liquid developer for development of electrostatic latent images is prepared by dispersing a colored solution into a carrier liquid having specific insulation resistance of more than 10^9 Ω-cm. and a dielectric constant of less than 3, said colored solution comprising a polar solvent, insoluble in said carrier liquid, with said colored substance being dissolved in said solvent.

3,729,419
LIQUID DEVELOPER
Satoru Honjo, Tokyo, Hajime Miyatuka, Asaka, and Sadao Osawa, Kawaguchi, Japan, assignors to Xerox Corporation, Stamford, Conn.
No Drawing. Filed Mar. 5, 1971, Ser. No. 121,537
Claims priority, application Japan, Mar. 12 ,1970, 45/20,984
Int. Cl. G03g *9/04, 13/10*
U.S. Cl. 252—62.1 7 Claims

Liquid developer for developing an electrostatic latent image present on an electrostatographic imaging surface comprising an insulating liquid having dispersed therein positively charged marking particles and also containing at least one charge control agent selected from the group consisting of vinyltriethoxysilane, γ-glycidoxypropyltrimethoxysilane, and β-(3,4-epoxycyclohexyl)ethyltrimethoxysilane.

3,729,420
ANTIFREEZE COMPOSITIONS
Herbert L. Sanders, Skokie, Ill., and John B. Braunwarth, Janesville, Wis., assignors to Northern Petrochemical Company, Omaha, Nebr.
No Drawing. Original application Oct. 31, 1968, Ser. No. 764,919, now abandoned. Divided and this application Aug. 10, 1970, Ser. No. 62,668
Int. Cl. C09k *3/02*
U.S. Cl. 252—77 4 Claims

Disclosed are olefin oxide adducts of N-alkyl diethanolamines and processes of producing the same. The adducts are useful foam inhibitors and as such find use in ethylene glycol-based engine coolants.

3,729,421
SOAP CONE AND HOLDER
Cleo E. Gibson and Lee Ben Gibson, both of P.O. Box 416, Snellville, Ga. 30278
Continuation-in-part of abandoned application Ser. No. 378,906, June 29, 1964. This application Aug. 4, 1970, Ser. No. 60,923
Int. Cl. C11d *17/00*
U.S. Cl. 252—90 6 Claims

A conically shaped single use article of sodium stearate and additive soap adapted to nest with other similarly constructed single use articles of soap so as to be easily and individually withdrawn from a dispenser.

3,729,422
MILDEWSTATIC LAUNDRY SOUR
William Lozo, Trenton, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.
No Drawing. Filed Mar. 22, 1971, Ser. No. 127,040
Int. Cl. C11d *3/48*
U.S. Cl. 252—106 4 Claims

A mildewstatic laundry sour wherein para-halo-metaxylenol and zinc silicofluoride are the active ingredients is disclosed.

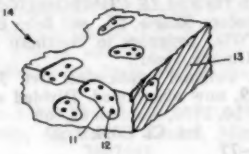
3,729,423
SOLID ACID CONTAINING PEELING TYPE PICKLING COMPOSITION
Nobuyoshi Hirota, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed Apr. 6, 1971, Ser. No. 131,786
Claims priority, application Japan, Apr. 30, 1970, 45/36,423
Int. Cl. C11d 7/08; C23g 1/02
U.S. Cl. 252—142 5 Claims

A peelable composition suitable for pickling is prepared from sodium alginate, gelatin, starch, a water-soluble resin and a penetrant.

3,729,424
TERTIARY AZEOTROPIC CLEANING SOLUTION BASED ON TETRACHLORODIFLUOROETHANE
John Allan Schofield, Riverside, Conn., and Roger Albert Delano, Dobbs Ferry, N.Y., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Original application Oct. 28, 1968, Ser. No. 771,334, now Patent No. 3,640,884. Divided and this application July 28, 1971, Ser. No. 167,012
Int. Cl. C09d 9/00; C11d 7/52; C23g 5/02
U.S. Cl. 252—171 2 Claims

A ternary azeotrope of tetrachlorodifluoroethane, dichloroethane and methanol has superior properties for solvent vapor cleaning and degreasing applications.

3,729,425
POROUS CHEMILUMINESCENT MATERIAL AND METHOD OF MANUFACTURE
Carl A. Heller, Herbert P. Richter, and William S. McEwan, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy
Filed Apr. 29, 1969, Ser. No. 823,244
Int. Cl. C09k 3/00
U.S. Cl. 252—188.3 CL 3 Claims



A porous sponge-like chemiluminescent material comprising porous polyethylene impregnated with tetrakis-(dimethylamino)ethylene and having lithium chloride dispersed throughout the walls of the pores. This material is used in location markers, free-fall dispensers, and the like, and gives good light yield under humid conditions.

3,729,426
CHEMILUMINESCENT FLUORESCER COMPRISING PHENYLETHYNYL SUBSTITUTED ORGANIC COMPOUNDS
Arnold Zweig, Westport, and Donald Roy Maulding, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Original application Mar. 14, 1968, Ser. No. 712,922. Divided and this application Apr. 20, 1970, Ser. No. 30,342
Int. Cl. C09k 3/00
U.S. Cl. 252—188.3 CL 7 Claims

This invention relates to a chemiluminescent system to obtain chemiluminescent light by reacting an oxalic-type compound of the group consisting of (a) an oxalic-type anhydride, (b) an oxalic-type amide, (c) an oxalic-type O-acylhydroxylamine, and (d) an oxalic-type ester with a hydroperoxide compound in the presence of a solvent and a phenylethynyl-substituted aromatic compound as a fluorescer.

3,729,427
NEUTRAL DENSITY SOLUTIONS CONTAINING NIGROSIN DYE AND CARBON BLACK
Allan L. Louderback, Temple City, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
No Drawing. Filed Apr. 8, 1971, Ser. No. 132,562
Int. Cl. F21v 9/02; G02b 5/24
U.S. Cl. 252—300 2 Claims

A neutral density solution comprising an admixture of nigrosin dye and a carbon black dispersion in dilute aqueous solution which exhibits absorbance linearity in the visible and ultraviolet range.

3,729,428
SILICA CONTAINING CATALYST PREPARATION
Keith George Allum, Bracknell, England, assignor to The British Petroleum Company Limited, London, England
No Drawing. Filed June 4, 1970, Ser. No. 43,554
Claims priority, application Great Britain, June 17, 1969, 30,578/69
Int. Cl. B01j 11/22, 11/40
U.S. Cl. 252—454 1 Claim

A catalyst for the oligomerisation of olefins e.g. butenes to octenes and dodecenes, is prepared by contacting silica gel sequentially with aqueous solutions containing (i) aluminium ions (ii) alkali metal ions (iii) nickel ions in that order, and then activating the catalyst by heating in air or an inert gas to 400–1000° C. The oligomers have a low degree of branching, and are produced by contacting the catalyst with the olefin at a temperature from 0 to 300° C. and a pressure from 0 to 5000 p.s.i.g.

3,729,429
LAYERED COMPLEX METAL SILICATE COMPOSITIONS AND THEIR PREPARATION
Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company
Filed Aug. 31, 1970, Ser. No. 68,324
Int. Cl. B01j 11/22, 11/40
U.S. Cl. 252—454 96 Claims

A new and improved process for the preparation of layered complex metal silicate, especially chrysotiles, at low severity conditions. These crystalline forms of complex metal silicate, of shape ranging from thick wall tubes through thin wall tubes, and thin wall tubes through flakes, can be produced, with high surface area, as desired, in hydrated form, by contact of suitable silica and metal sources in a reaction or synthesis mixture at pH of at least about 10, and preferably from about 12 to 14, at moderate temperatures and pressures. The process can produce chrysotiles, some of which have been found to exist in nature, or heretofore synthetically produced, but can as well produce chrysotile species which differ chemically or physically, or both, from previously known species. New and novel forms of chrysotile are improved in many of their physical and chemical characteristics as contrasted with previous species, and are particularly useful directly or indirectly in conducting hydrocarbon conversion reactions.

3,729,430
PERFUME COMPOSITIONS
James Douglas Grossman, Old Bridge, and Kenneth K. Light, Freehold, N.J., assignors to International Flavors and Fragrances Inc., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 113,699, Feb. 3, 1971, now Patent No. 3,701,801. This application Nov. 5, 1971, Ser. No. 196,221
Int. Cl. A61k 7/00; C07c 69/78; C11b 9/00
U.S. Cl. 252—522 3 Claims

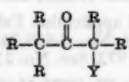
Novel perfume compositions and perfumed articles are described containing certain monoalkyl-3-chloro ring-substituted resorcylic acid esters which impart to these perfume compositions and perfumed articles a natural and distinctly oakmoss note without causing discoloration.

3,729,431
DETERGENT COMPOSITION
Herbert C. Smitherman, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Oct. 12, 1971, Ser. No. 188,597
Int. Cl. C11d *3/65*
U.S. Cl. 252—535 **10 Claims**

A detergent composition is formulated that is relatively calcium insensitive and can effectively be used with many builders. The detergent composition consists essentially of the water-soluble salts of from 40% to 55% alkene-1-sulfonate, from 20% to 40% 2-alkoxy alkane-1-sulfonate with the alkoxy radical containing from one to four carbon atoms, from 10% to 20% of 3- and 4-hydroxy alkane-1-sulfonate and from 2% to 15% alkene disulfonate all by percentage weight. The carbon chain lengths of the above sulfonates are all from 10 to 20 carbon atoms long. The alkene double bond of the alkene-1-sulfonate and alkene disulfonate is distributed between the terminal and the fifth and the seventh carbon atoms, respectively. A preferred built detergent composition consists essentially of the above detergent composition and a builder salt in the ratio of detergent to builder of from 10:1 to 1:10.

3,729,432
DETERGENT BUILDER COMPOSITION
Herman A. Bruson, Woodbridge, Conn., and Henry Gould, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.
No Drawing. Filed Aug. 6, 1971, Ser. No. 169,870
Int. Cl. C11d *1/12, 3/20, 7/26*
U.S. Cl. 252—545 **14 Claims**

The present invention relates to a detergent builder composition having the formula:



wherein R is $—CH_2—CH_2—COOX$, X being a member selected from the class consisting of hydrogen, alkali metals, ammonium and substituted ammonium, and Y is selected from the class consisting of hydrogen and

$$—CH_2CH_2—COOX,$$

X being selected from the class consisting of hydrogen, alkali metals, ammonium and substituted ammonium.

3,729,433
METHOD OF PREPARING POLYARYLENE POLYMERS WITH ALKYL AMINO AROMATICS, COMPOSITIONS THEREOF AND PRODUCTS
Norman Bilow, Los Angeles, and Abraham L. Landis, Northridge, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
No Drawing. Continuation of application Ser. No. 785,013, Dec. 5, 1968. This application Sept. 2, 1971, Ser. No. 177,905
Int. Cl. C08f *1/76*
U.S. Cl. 260—2 H **11 Claims**

This disclosure describes a method of providing self-curing and cured hydroxylated or nonhydroxylated polyaromatics or polyarylenes such as polyphenylenes, polyphenolphenylenes, polyphenylsilanes, and polyphenylethers, and mixtures thereof which are prepared from corresponding aromatic hydrocarbons or mixtures of phenols with such aromatic hydrocarbons and aromatic Mannich bases using a strong protonic or non-protonic acid, for example, strong Lewis acid catalysts. The cured polymers exhibit improved adhesion characteristics, and provide compositions with improved strength. The disclosure more particularly describes the method of preparation of improved curable and cured products, of said polyaromatic polymers partially cured and the curing thereof with armoatic Mannich bases of poly[α-(dialkylaminomethyl)]phenyl, or homologous biphenyl, terphenyl or phenol derivatives, isomers of same, and mixtures thereof, with an acid material.

3,729,434
METHOD OF PRODUCING FIRE RETARDANT EMULSIONS
John H. Todd, St. Louis, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.
No Drawing. Continuation-in-part of application Ser. No. 769,360, Oct. 21, 1968. This application June 28, 1971, Ser. No. 157,715
Int. Cl. C09d *5/14, 5/16*
U.S. Cl. 106—15 FP **4 Claims**

There is disclosed a method of making a fire retardant aqueous emulsion for treating flammable materials such as cotton and synthetic fabrics. The aqueous emulsion is derived from a stable concentrate comprising a phosphate ester of haloalkanols dissolved in an organic solvent and an emulsifier selected from a number of oil soluble metal sulfonates blended with polyoxyethylene ether, said solvent having a flash point of about 80° F. and a boiling point range of from 300° to 350° F.

3,729,435
CATHODICALLY DEPOSITABLE COATING MATERIALS
Gerhard Bachmann, Ludwigshafen, and Matthias Marx, Bad Durkheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Rhineland-Pfalz, Germany
No Drawing. Filed June 8, 1970, Ser. No. 44,599
Claims priority, application Germany, June 19, 1969, P 19 30 949.0
Int. Cl. C08g *45/08, 45/10*
U.S. Cl. 260—18 EP **2 Claims**

Cathodically depositable coating materials containing a condensation product which is soluble or dispersible in water, which is at least partly in the form of a salt of a water-soluble carboxylic acid, and which has been obtained by condensation of (a) a polyfunctional amino-alcohol containing tertiary nitrogen atoms with (b) a mixture of monocarboxylic acids and polycarboxylic acid compounds and (c) a phenolic or amino resin which may be etherified.

3,729,436
PROCESSABLE FLAME RESISTANT ABS-PVC BLENDS
Wendell O. Phillips, Stow, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio
No Drawing. Filed Oct. 6, 1971, Ser. No. 187,102
Int. Cl. C08d *9/08*
U.S. Cl. 260—23.7 M **9 Claims**

Processable blends of ABS polymers and PVC polymers in weight ratios of 50:50 to 40:60 are rendered non-burning by the incorporation of at least 2 parts by weight per 100 parts by weight of total polymers of chromium salts of carboxylic acids containing from 2 to 20 carbon atoms. Significant flame resistance results from the incorporation of such chromium salts in blends of ABS and PVC polymers in weight ratios as high as 60:40.

3,729,437
PROCESS FOR THE PRODUCTION OF CONCENTRATED AQUEOUS EMULSIONS OR INSOLUBLE LIQUID, PASTY OR SOLID ORGANIC OR INORGANIC SUBSTANCES
Willy Bernheim, Diedorf, near Augsburg, and Hans Deiner, Neusass, near Augsburg, Germany, assignors to Chemische Fabrik Pfersee G.m.b.H., Augsburg, Germany
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,431
Claims priority, application Germany, Dec. 27, 1969, P 19 65 068.1
Int. Cl. B01j *13/00*
U.S. Cl. 260—29.2 EP **8 Claims**

Concentrated aqueous emulsions or dispersions of water-insoluble liquid, pasty or solid organic or inorganic

substances are prepared with emulsifiers which are produced by the reaction of:

(a) about 1 mole of urea, guanidine, derivatives of guanidine or the products of the decomposition of guanidine derivatives; with

(b) about 0.25–2.5 moles of an epoxy compound containing in the molecule on the average more than one epoxy group; and

(c) about 0.1–2 moles of an amine of the general formula

wherein

R_1 represents an alkyl group having 2–4 carbon atoms or an alkanol group of 2–5 carbon atoms,

R_2 and R_3 represent hydrogen, an alkyl group having 1–4 carbon atoms, or an alkanol group having 2–5 carbon atoms,

wherein R_2 and/or R_3 represent identical or different groups, and at least two reactive hydrogen atoms are present in the molecule of the general formula, under heating, preferably in the presence of water-miscible solvents boiling at more than about 50° C.

3,729,438

LATEX POLYMERS OF VINYLACETATE AND A SILANE

Marion F. Plesich, Ossining, N.Y., and Edmund A. Zavaglia, Newark, Del., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Mar. 30, 1970, Ser. No. 23,992

Int. Cl. C08f *1/13, 3/56*

U.S. Cl. 260—29.6 R **5 Claims**

Latex polymers comprising an aqueous dispersion of an interpolymer selected from the class consisting of (A) a copolymer of vinyl acetate and vinyl hydrolyzable silane and (B) a terpolymer of vinyl acetate, an ester, e.g. acrylic ester, maleic ester or fumarate ester, and vinyl hydrolyzable silane, as well as the crosslinked polymers derived therefrom; said latex polymers having utility as protective surface coatings and as vehicles for paint formulations.

3,729,439

ENTROPICALLY STABILIZED WATER BASE DISPERSIONS

Fred W. Parker, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 30, 1971, Ser. No. 139,203

Int. Cl. C08f *15/40, 37/00*

U.S. Cl. 260—29.7 W **10 Claims**

Graft copolymers having graft segments which contain hydroxy terminated acrylic monomers which enable the copolymer to form water base dispersions.

3,729,440

THERMALLY STABLE POLYCARBONATE

Frank N. Liberty, Mount Vernon, Ind., assignor to General Electric Company

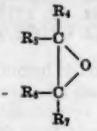
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,824

Int. Cl. C08g *51/58*

U.S. Cl. 260—45.7 P **5 Claims**

A thermally stable aromatic polycarbonate composition which is stabilized with a minor amount of a phosphinite, which phosphinite has the general following formula:

Preferably, the phosphinite is ethyl diphenyl phosphinite. The composition may also have included with it an epoxy compound having the following formula:



3,729,441

STABILIZED HIGH MOLECULAR WEIGHT POLY(ETHYLENE OXIDE)

Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,809

Int. Cl. C08f *45/58, 51/58*

U.S. Cl. 260—45.95 R **3 Claims**

High molecular weight polymers of poly(ethylene oxide) are stabilized so as to inhibit degradation thereof to lower molecular weight polymer by admixing therewith 2,6-di-tert-butyl-4-methoxy phenol.

3,729,442

LIQUID 2-HYDROXY - 4-ALKOXYBENZOPHENONE ULTRAVIOLET LIGHT STABILIZERS FOR POLYMERS

Ingenuin A. Hechenbleikner, Cincinnati, Ohio, assignor to Carlisle Chemical Works, Inc., Reading, Ohio

No Drawing. Original application Feb. 11, 1970, Ser. No. 10,608, now Patent No. 3,658,910. Divided and this application Jan. 7, 1972, Ser. No. 216,277

Int. Cl. C08f *45/58*

U.S. Cl. 260—45.95 F **7 Claims**

Liquid 2-hydroxy-4-alkoxybenzophenones are prepared where the alkoxy group is a mixture of random branched alkyl groups of 6–10 carbon atoms. They are useful as ultraviolet light stabilizers for polymers, e.g. vinyl chloride polymers and monoolefin polymers.

3,729,443

SULPHUR-CONTAINING ANTIOXIDANTS

Hans Jakob Peterli, Fullinsdorf, Basel-Land, and Hansjorg Heller, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 822,344, Mar. 6, 1969, now Patent No. 3,546,163, which is a division of application Ser. No. 613,730, Feb. 3, 1967, now Patent No. 3,506,716. This application Sept. 9, 1970, Ser. No. 72,894

The portion of the term of the patent subsequent to Dec. 8, 1987, has been disclaimed

Claims priority, application Switzerland, Feb. 8, 1966, 1,759/66

Int. Cl. C08f *45/58;* **C08g** *51/58*

U.S. Cl. 260—45.95 C **3 Claims**

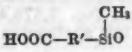
Compositions comprising an organic polymeric material sensitive to oxidation and sulfur containing sterically hindered 1,1-bis-(hydroxyphenyl)alkans which compounds have antioxidant properties and substantially protect the organic polymeric material against oxidative degradation. A typical embodiment is a composition comprising polypropylene and 1,1-bis-(2-methyl-4-hydroxy-5-tert. butylphenyl)-3-octadecylthiobutane in an amount sufficient to protect said polypropylene against oxidative deterioration.

3,729,444
CARBOXYFUNCTIONAL SILICONES

Alvin E. Bey, Midland, Mich., and James R. Heffel, Shelton, Conn., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Aug. 5, 1969, Ser. No. 847,742
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 E 1 Claim

A sizing agent for paper is disclosed which is a siloxane copolymer consisting essentially of about 90 to 99 mole percent of $(CH_3)_2SiO$ units, and about 1 to 10 mole percent of



units wherein R′ is composed of carbon, hydrogen and sulfur atoms, the sulfur atoms being present in the form of thioether linkages, said R′ containing from 2 to 10 carbon atoms. Paper sized with this siloxane has enhanced resistance to wetting. Sizing can be accomplished by either internal sizing processes (wet end) or surface sizing processes (dry end).

3,729,445
FLUOROSILICONE POLYMERS

Arthur G. Smith and Yung Ki Kim, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application Aug. 1, 1969, Ser. No. 846,956, now Patent No. 3,609,174. Divided and this application Mar. 4, 1971, Ser. No. 121,118
Int. Cl. C08f 11/04
U.S. Cl. 260—46.5 R 3 Claims

Organopolysiloxanes, containing

units, are disclosed as nonflammable fluid lubricants and nonflammable elastomers.

3,729,446
IMIDO-SUBSTITUTED POLYESTER COMPOSITIONS

Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original application July 1, 1969, Ser. No. 838,314. Divided and this application Apr. 30, 1971, Ser. No. 139,213
Int. Cl. C08g 17/14
U.S. Cl. 260—47 CZ 3 Claims

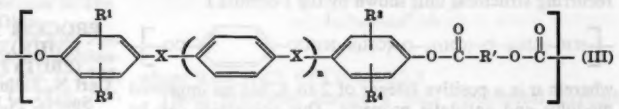
Polyesters having at least one chemically combined aliphatically unsaturated imido radical, such as a maleimido radical are provided and a method for making such materials. Reaction can be effected between a polyester and an imido-substituted acylhalide, such as a maleimidobenzoylchloride in the presence of an acid acceptor. Blends of the imido-substituted polyester and a variety of aliphatically unsaturated organic monomers, such as styrene, chloro styrene, diallylphthalate, N-phenylmaleimide, bis maleimides or organic polymers such as polystyrenes, styrene-butadiene block copolymers, polyvinylfluoride, polyvinylchloride, polyesters, polysulfone, polysulfone ethers, polycarbonate, polyphenylene oxides, epoxy resins, phenol-formaldehyde resins, acrylonitrile butadiene styrene terpolymers, etc., also are provided. The imido-substituted polyester compositions of the present invention can be employed as coatings, varnishes, injection molding compounds, laminating compounds, etc.

3,729,447
FLAMEPROOF HIGH MOLECULAR AROMATIC POLYESTER-CARBONATES

Ulrich Haberland, Krefeld-Bockum, Günther Lenz, Krefeld, Hermann Schnell, Krefeld-Uerdingen, and Kurt Weirauch, Krefeld-Bockum, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

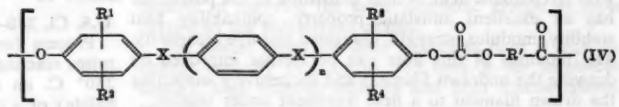
No Drawing. Filed Feb. 25, 1971, Ser. No. 119,045
Claims priority, application Germany, Feb. 28, 1970, P 20 09 494.4; Oct. 26, 1970, P 20 52 378.8
Int. Cl. C08g 17/13
U.S. Cl. 260—47 XA 8 Claims

High molecular weight linear polyester-polycarbonates are provided which have recurring structural units of the general formulae:



(III)

and



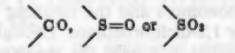
(IV)

in which general formulae:

R′ is a divalent aromatic radical;

R^1, R^2, R^3 and R^4, which may be the same or different, each denote a hydrogen chlorine or bromine atom or an alkyl radical having one to four carbon atoms;

X is a single bond, or an alkylene, alkylidene or isoalkylidene radical each of which may have one to five carbon atoms, or a cycloalkylene or cycloalkylidene radical each of which contains five to fifteen carbon atoms, a



linkage or an oxygen or sulphur atom; and

n is 0 or 1,

and to shaped articles, films and foils manufactured from them.

3,729,448
POLYIMIDES FROM 2,6-DIAMINO-S-TRIAZINES AND DIANHYDRIDES

Raymond Seltzer, and David A. Gordon, both of 63 E. 9th St., New York, N.Y.

Filed Oct. 31, 1969, Ser. No. 873,109
Int. Cl. C08g 20/32
U.S. Cl. 260—65 14 Claims

Triazine-based polyimides are prepared by first reacting dianhydrides with s-triazine compounds containing at least two primary aromatic, aliphatic, cycloaliphatic or heterocyclic amino groups to give triazine-based polyamic acids which, on curing, yield the polyimides. From solutions of polyamic acids useful fibers, films, adhesives, coatings and composites can be prepared. The triazine-based polyimides possess high temperature oxidative stability, good mechanical properties and electrical properties and low void contents.

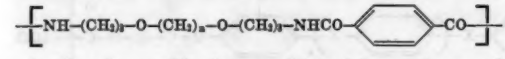
3,729,449

POLYAMIDE FIBERS COMPOSED OF THE POLYAMIDE AND METHODS FOR PRODUCING THEREOF

Isao Kimura, Masao Matsui, Hiroshi Takahashi, and Shizume Takemoto, Osaka-fu, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 20, 1970, Ser. No. 65,641
Claims priority, application Japan, Aug. 27, 1969, 44/67,744; Dec. 4, 1969, 44/97,690; Apr. 13, 1970, 45/31,387; Apr. 21, 1970, 45/34,025; Apr. 23, 1970, 45/35,046; May 26, 1970, 45/45,418
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 2 Claims

A polyamide consisting of a substantial homopolymer of poly-bis(propoxy)alkylene terephthalamide having the recurring structural unit shown by the Formula I



wherein n is a positive integer of 2 to 4, has an improved modulus and antistatic property. This polyamide can be obtained by polymerizing the corresponding etherdiamine with terephthalic acid. A fiber consisting of the polyamide has an excellent antistatic property, spinnability heat stability, modulus, strength, elongated and dye receptivity. The modulus of this fiber can be further improved by drawing the undrawn filament and successively subjecting the drawn filament to a heat treatment under tension.

3,729,450

METHOD OF RECOVERING COPOLYMERS

Francis R. Galiano and Norman A. Greenlee, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Mar. 10, 1971, Ser. No. 123,031
Int. Cl. C08f *1/96*
U.S. Cl. 260—78.5 T 3 Claims

Maleic anhydride and aliphatic 1-olefins having from 8 to 18 carbon atoms inclusive are copolymerized in the presence of a free radical catalyst and an efficient solvent for both the monomers and the resulting copolymer, for example 1,1- or 1,2-dichloroethane. Enough solvent is employed to solubilize not only the reactants but also the copolymer products to give solutions of moderate viscosities. The products are then recovered by steam distillation until solvent and other liquid materials are removed, leaving molten copolymer, which is then poured on a chilled metal surface on which the polymer rapidly solidifies. The steam stripped copolymers are sufficiently non-tacky and brittle so that they are parted from the metal surface and broken into chunks by bending or inverting the chilled surface and allowing the solid material to fall for a substantial distance into a container.

3,729,451

PROCESS FOR COPOLYMERIZATION OF MALEIC ANHYDRIDE WITH 1-OLEFINS

Ronald G. Blecke, Shawnee Mission, and Robert W. Hill, Leawood, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed July 10, 1972, Ser. No. 270,331
Int. Cl. C08f *1/09*
U.S. Cl. 260—78.5 R 3 Claims

Maleic anhydride and polymerizable liquid 1-olefins having from 4 to 14 carbon atoms are copolymerized employing a liquid-liquid dispersion as the reaction mixture by use of excess liquid 1-olefin as a diluent and a minor amount of a copolymer of maleic anhydride with an aliphatic 1-olefin having from 14 to 18 carbon atoms as a dispersing agent. Maleic anhydride and a polymerization initiator become dispersed in the mixture of olefin and dispersing agent and polymerization takes place when the temperature is raised to about 80° C. with agitation.

3,729,452

REACTION PRODUCTS OF AN AMINE AND A METHYL VINYL ETHER-MALEIC ANHYDRIDE COPOLYMER

Harry J. Andress, Jr., Ritman, and Henry Ashjian, Brunswick, N.J., assignors to Mobil Oil Corporation

No Drawing. Original application July 26, 1968, Ser. No. 747,808, now Patent No. 3,578,421, dated May 11, 1971. Divided and this application May 13, 1970, Ser. No. 48,643
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA 1 Claim

Liquid hydrocarbon compositions are provided containing, in an amount sufficient to impart anti-static properties, the reaction product of an amine and a methyl vinyl ether-maleic anhydride copolymer.

3,729,453

PROCESS FOR THE PREPARATION OF POLYAMIDOXIMES AND POLYBENZIMIDAZOLE (PBI)TYPE POLYMERS DERIVED THEREFROM

Carl N. Zellner, New Hope, Pa., and Henry W. Steinman, Sparta, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,752
Int. Cl. C08g *33/02*
U.S. Cl. 260—79.3 R 22 Claims

Process for the preparation of polymers which comprises reacting at temperatures of from about 0° to about 250° C. an aromatic diamine with a bis(hydroxamoyl halide) or a derivative thereof to form a polyamidoxime, which may then be subjected to ring closing conditions to form polybenzimidazole (PBI) type polymers. Formation of the polyamidoxime is preferably conducted in the presence of a solvent, which may or may not also function as an acid-acceptor; if not, then preferably also in the presence of an acid-acceptor. The preferred acid-acceptors are those which are insoluble in the reaction mixture—most preferably melamine. The ring closure may be conducted in the presence of a catalyst at temperatures of from about 0° to about 250° C. or by reaction with an aromatic sulfonyl halide at temperatures of from about 0° to about 90° C. Reactive amine or hydroxamoyl halide terminal groups of the polyamidoximes or PBI type polymers may be reacted with other compounds or polymers which contain groups reactive therewith in order to further extend the polymer chains. In a preferred prior step, aromatic bis(hydroxamoyl halide) reactants are made by the reaction of dialkyl aromatic precursors, e.g., any of the isomers of xylene, with, e.g., nitrosyl halide. Novel polyamidoximes.

3,729,454

METHOD OF POLYMERIZATION OF VINYLTRIORGANOSILANES

Nikolai Sergeevich Nametkin, Leninsky prospekt 13, kv. 11; Sergei Garievich Durgarian, ulitsa Garibaldi 21, korpus 3, kv. 67; Valery Samuilovich Khotimsky, Konkovo-Derevlevo 1, Mikroraion, korpus 7, kv. 147; Vadim Ivanovich Kopkov, ulitsa Zelenogradskaya 25, korpus 2, kv. 194; and Iosif Efimovich Chernyakov, ulitsa Lobachevskogo 24, kv. 35, all of Moscow, U.S.S.R.

No Drawing. Filed Feb. 10, 1971, Ser. No. 114,352
Claims priority, application U.S.S.R., Feb. 16, 1970, 1,397,127
Int. Cl. C08f *1/68, 3/00*
U.S. Cl. 260—80 PS 26 Claims

A method of polymerization of vinyltriorganosilanes residing in that said monomers are polymerized in the presence of dibutyl ether under the effect of dilithium sili-

con containing carbochain adducts prepared by reacting metallic lithium with a vinyltriorganosilane.

3,729,455

ELECTROCONDUCTIVE METHOD FOR CONTROLLING ORGANOMETALLIC CATALYTIC POLYMERIZATIONS

Kenneth E. Harwell, Merriam, and Francis R. Galiano, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,426
Int. Cl. C08f *1/00, 3/02, 15/40*
U.S. Cl. 260—80.7 2 Claims

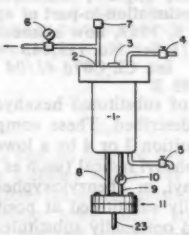
A control method comprising measuring the electrical conductivity of an organic solvent olefin polymerization system containing an organometallic catalyst and adjusting the concentration of the organometallic catalyst in said polymerization system responsive to the electroconductivity measurement.

3,729,456

POLYMERS OF N-3-HYDROXYALKYL ACRYLAMIDES AND METHOD OF PREPARATION

Donald Irvin Hoke, Chagrin Falls, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of application Ser. No. 788,820, Jan. 3, 1969, now Patent No. 3,585,125, which is a continuation-in-part of abandoned application Ser. No. 713,787, Mar. 18, 1968. This application July 1, 1970, Ser. No. 51,712
Int. Cl. C08f *15/10*
U.S. Cl. 260—85.7 19 Claims



N-3-hydroxyalkyl acrylamides, and substituted derivatives thereof, are prepared by (1) reduction of an N-3-oxohydrocarbon-substituted acrylamide, (2) addition of an alcohol to the N-3-oxohydrocarbon-substituted acrylamide, followed by hydrogenation of the carbonyl group and elimination of the alcohol, or (3) hydrolysis of a 2-vinyl-5,6-dihydro-1,3-oxazine. The acrylamides are useful as monomers for conversion to polymers (which may also be prepared by reduction of the corresponding oxohydrocarbon-substituted acrylamide polymers) with a number of interesting properties, including utility as membranes for desalination of water by hyperfiltration. The polymers may be crosslinked by the action of such reagents as diisocyanates, dicarboxylic acid halides, and aldehydes in acidic solution.

3,729,457

MACRONET POLYSTYRENE STRUCTURES FOR IONITES AND METHOD OF PRODUCING SAME

Vadim Alexandrovich Davankov, Leningradskoe shosse 112/1, korpus 3, kv. 703; Sergei Vasilievich Rogozhin, ulitsa Vavilova 55/5, kv. 52; and Maria Petrovna Tsjurupa, Pokrovsky bulvar 14/5, kv. 69, all of Moscow, U.S.S.R.

No Drawing. Filed Sept. 11, 1970, Ser. No. 71,350
Claims priority, application U.S.S.R., Sept. 12, 1969, 1,360,771
Int. Cl. C08f *19/02*
U.S. Cl. 260—88.2 C 4 Claims

Macronet polystyrene structures for ionites, characterized in that they consist of cross-linked polystyrene or cross-linked copolymers of styrene with divinylbenzene in which the content of the divinylbenzene in the copolymers is up to 1 mole percent, and the linking bridges between the benzene rings of the polystyrene chains are as follows

where R=CH_2, CO; n=1,2,3

The proposed macronet structures can be produced by using a method providing for treatment of polystyrene or granular copolymers of styrene with divinylbenzene, the latter being included in the copolymers in an amount of up to 1 mole percent, by a cross-linking agent in a medium of an organic solvent in the presence of the Friedel-Crafts catalyst. The cross-linking agent is composed of bisfunctional compounds of the general formula

where R=CH_2Cl, COCl; n=1,2,3

These structures feature a high mechanical strength and have adequately long, rigid, chemically stable bridges regularly arranged between the polystyrene chains and capable of carrying the same ionogenic groups as those carried by the polystyrene chains.

The ionites based on these structures have a high exchange capacity (e.g. up to 5.35 meq./g. for sulphocationite), high osmotic stability and high kinetic characteristics

---

3,729,458

COUPLING TETRAZOTIZED AROMATIC DIAMINES WITH AMINO HYDROXYNAPHTHALENES EMPLOYING BASIC INORGANIC SALTS OF MAGNESIUM OR LITHIUM

Gustav Edward Rast, Hamburg, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,391
Int. Cl. C09b *35/02, 35/10, 35/24*
U.S. Cl. 260—182 11 Claims

An improvement in the process of coupling tetrazotized aromatic diamines with aminohydroxynaphthalenes is provided by employing an acid binding agent selected from basic inorganic compounds of lithium and magnesium.

3,729,459

BASIC MONOAZO DYESTUFFS

Gert Hegar, Schoenenbuch, Switzerland, assignor to Ciba-Geigy AG, Basle, Switzerland

Continuation-in-part of Ser. No. 659,583, Aug. 10, 1967, abandoned. This application Dec. 5, 1969, Ser. No. 882,751
Claims priority, application Switzerland, Aug. 17, 1966, 11861/66; June 26, 1967, 9053/67
Int. Cl. C09b *29/08, 31/04*; D06p *3/70*
U.S. Cl. 260—205 5 Claims

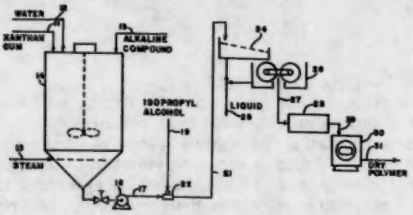
Basic monoazo dyestuff of the formula where R is alkyl, R_1 is phenyl or substituted phenyl, R_2 and R_3 are various organic substituents and X is an anion, which dyestuffs are useful in dyeing polyvinyl chloride, polyamide, polyurethane, polyester and especially polyacrylonitrile fibers with intense, level dyeings having good fastness to light and other good general fastness properties, having good stability within a wide pH range, having good affinity in aqueous solutions at different pH values and usually reserving wool wall.

3,729,460

MODIFIED HETEROPOLYSACCHARIDES

John Tinsman Patton, 1213 E. Houghton Ave., Houghton, Mich. 49931

Filed Mar. 2, 1970, Ser. No. 15,590
Int. Cl. C07c 47/18
U.S. Cl. 260—209 R 1 Claim



An improved thickening agent is prepared by reacting a heteropolysaccharide produced by bacteria of the genus Xanthomonas with an alkaline compound in an aqueous reaction media at elevated temperatures.

3,729,461

SYNTHESIS OF GLYCOSYL GLYCERIDES

Yeshajahu Pomeranz, Madison, Wis., and Hans Peter Wehrli, Zurich, Switzerland, assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Dec. 23, 1970, Ser. No. 101,135
Int. Cl. C07c 47/18
U.S. Cl. 260—210 R 6 Claims

A method for synthesizing glycosyl glycerides from 2,5-methylene-D-mannitol acetobromogalactose and fatty acid chlorides is described. Specific fatty acids are attached at specific glyceryl positions to give such compounds as 1-O-palmitoyl-2-O-linoleoyl - 3 - O-(β-D-galactopyranosyl)-sn-glycerol.

3,729,462

p-AMINOALKYLBENZENESULFONAMIDE DERIVATIVES

Henri Dietrich, Arlesheim, Basel-Land, and Claude Lehmann, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Filed Sept. 1, 1970, Ser. No. 68,793
Claims priority, application Switzerland, Sept. 4, 1969, 13,400/69
Int. Cl. C07d 49/30
U.S. Cl. 260—309.7 5 Claims

Compounds of the class of substituted 1-[p-(aminoalkyl)-phenylsulfonyl]-2-imino-imidazolidines and the pharmaceutically acceptable acid addition salts thereof have hypoglycemic activity; these compounds are active ingredients of pharmaceutical compositions and are useful for the treatment of diabetes mellitus; a typical embodiment is 1-[p-(2-ethoxyacetamidoethyl) - phenylsulfonyl]-2-imino-3-cyclohexyl-imidazolidine.

3,729,463

p-AMINOALKYL BENZENESULFONAMIDE DERIVATIVES

Henri Dietrich, Arlesheim, Basel-Land, and Claude Lehmann, Basel, Switzerland, assignors to Ciba-Geigy Corporation

No Drawing. Filed Sept. 1, 1970, Ser. No. 68,796
Claims priority, application Switzerland, Sept. 4, 1969, 13,397/69
Int. Cl. C07d 49/30
U.S. Cl. 260—309.7 4 Claims

Compounds of the class of 1-[p-thiocarboxamidoalkyl)-phenylsulfonyl]-2-imino-imidazolidines and pharmaceutically acceptable acid addition salts thereof have hypoglycemic activity; they are active ingredients of pharmaceutical compositions and are useful for the treatment of diabetes mellitus; a typical embodiment is 1-[p-(2-thioacetamidoethyl)-phenylsulfonyl] - 2 - imino-3-isobutyl-imidazolidine.

3,729,464

BIS CYANOPYRAZOLYL ALKANES AND BIS CYANOCYCLOPROPYL ALKANES

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed Aug. 27, 1971, Ser. No. 175,726
Int. Cl. C07d 49/02
U.S. Cl. 260—310 4 Claims

Diazoalkanes are reacted with acrylonitriles to obtain cyanopyrazolyl alkanes which are oxidized or photolyzed to cyanocyclopropyl alkanes. The cyanocyclopropyl alkane is cleaved by catalytic hydrogenation to obtain the aliphatic amine.

In one embodiment, bis-diazohexane is reacted with acrylonitrile to obtain bis (cyanopyrazolyl) hexane which, in turn, is oxidized to bis (cyanocyclopropyl) butane. The bis (cyanocyclopropyl) butane is cleaved by catalytic hydrogenation and 1,12-diaminododecane is obtained. These compounds are useful in the manufacture of polyamide resins.

3,729,465

HEXAHYDROAZEPINES

John Frederick Cavalla, Isleworth, and Alan Chapman White, Windsor, England, assignors to John Wyeth & Brother Limited, Taplow, Maidenhead, England

No Drawing. Continuation-in-part of application Ser. No. 848,080, Aug. 6, 1969, now abandoned. This application Feb. 3, 1971, Ser. No. 112,443
Int. Cl. C07d 41/04
U.S. Cl. 260—239 B 6 Claims

A new group of substituted hexahydroazepines useful as analgesics is described. These compounds are substituted at either position 3 or 4 by a lower alkyl group and a m-oxygenated phenyl radical (such as m-hydroxyphenyl, m - methoxyphenyl, m - benzyloxyphenyl, or m-acyloxyphenyl), optionally substituted at position 2 by a lower alkyl radical, and optionally substituted at position 1 by lower alkyl, lower alkenyl, lower alkynyl, cyclopropylmethyl, lower alkanoyl, or by ring-substituted or unsubstituted phenethyl, phenacyl, or β-benzoylethyl.

3,729,466

21-FLUORO DERIVATIVES OF 3β-HYDROXY-$\Delta^{4,6}$-HALO-20-OXO-PREGNADIENES

Georg Anner, Basel, and Peter Wieland, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Apr. 13, 1971, Ser. No. 133,736
Claims priority, application Switzerland, Apr. 17, 1970, 5,793/70
Int. Cl. C07c 173/00
U.S. Cl. 260—239.55 D 17 Claims

21-fluoro-steroid derivatives 3-hydroxy-$\Delta^{4,6}$-6-fluoro or 6-chloro-20-oxo-pregnadienes oxygenated in the 16- and 17-position have anti-inflammatory, gestagenic and anti-ovulatory activity. The compounds are prepared in a manner known per se.

3,729,467

PROCESS FOR THE PRODUCTION OF BIS-ARENAZOLYL METHINES

Reinhard Zweidler, 12 Kienbergstrasse, and Ivan Orban, 10 In den Klostermatten, both of Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 696,722, Jan. 10, 1968. This application May 25 ,1970, Ser. No. 40,435
Int. Cl. C09b 23/04
U.S. Cl. 260—240.7 6 Claims

A novel process for the production of certain basic bis-arenazolyl-methines, useful as optical brighteners or

bactericidal substances by alkylation of certain bis-arenazolyl-methylenes which are produced in turn from a reactive function al derivative of malonic acid and o-aminophenols is disclosed, which process avoids the necessity of using carbondisulphide as starting material, and of disposing the toxic methyl mercaptan obtained as by-product, in the hitherto used industrial process for the production of such compounds.

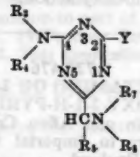
3,729,468

TRIAZINE DERIVATIVES AND PROCESS FOR THEIR PREPARATION

Hideo Tani, Masahiko Nagakura, and Takashi Mizutani, Tokyo, Japan, assignors to Kowa Company, Ltd., Nagoya, Japan

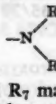
No Drawing. Filed July 17, 1968, Ser. No. 745,393
Claims priority, application Japan, July 20, 1967, 42/46,318; Sept. 13, 1967, 42/58,325; Apr.1, 1968, 43/20,965
Int. Cl. C07d *87/40, 87/46*
U.S. Cl. 260—246 B **40 Claims**

Novel triazine derivatives having a hypotensive activity and diuretic activity, and are useful in the field of medicines, expressed by the following formula:



(I)

wherein Y represents a member selected from the group consisting of lower alkoxy, azido and



R_1, R_2, R_3, R_4, R_6 and R_7 may be the same or different and represent a member which may have substituents and is selected from the group consisting of a hydrogen atom, amino group, lower alkyl group, allyl group, cycloalkyl group and aryl group; each of R_1 and R_2, R_3 and R_4, and R_6 and R_7 may bond together to form a multi-membered ring which may have substituents and is selected from the group consisting of multi-membered ring bonded with methylene, multi-membered ring bonded with methylene through an oxygen atom, multi-membered ring bonded with methylene through a nitrogen atom and bicyclo multi-membered ring; and R_5 represents a member selected from the group consisting of an aryl group and pyridyl group which may have substituents

and their salts, and also to a process for their preparation.

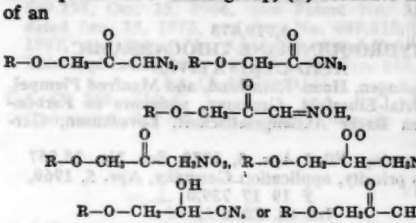
3,729,469

4-(3-AMINO-2-HYDROXYPROPOXY)-1,2,5-THIADIAZOLE COMPOUNDS

Burton Kendall Wasson, Valois, Quebec, Canada, assignor to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Application Apr. 21, 1969, Ser. No. 818,090, which is a continuation-in-part of abandoned application Ser. No. 731,333, May 22, 1968. Divided and this application Sept. 9, 1971, Ser. No. 179,145
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 **9 Claims**

4-[3-(substituted amino) - 2 - hydroxypropoxy]-1,2,5-thiadiazole compounds, optionally substituted in the 3-position of the thiadiazole nucleus which exhibit β-adrenergic blocking properties and thus are useful in the management of angina pectoris are described. The products are prepared by one of four principal methods (1) reaction of a 4-hydroxy - 1,2,5 - thiadiazole with epihalohydrin to provide 4-(3-halo - 2 - hydroxypropoxy)-1,2,5-thiadiazole which, upon treatment with alkali, forms the epoxide which is then reacted with an amine to provide the desired product; (2) reaction of a 3-chloro(or bromo)-4-(3 - substituted amino - 2 - hydroxypropoxy) - 1,2,5-thiadiazole with an amine or an N-containing heterocycle that replaces the 3-chloro group; (3) reductive alkylation of an



wherein R is the 1,2,5 - thiadiazole-4-yl group; and (4) reaction of a 3-substituted - 4 - (3-amino - 2 - hydroxypropoxy) - 1,2,5 - thiadiazole with a haloalkyl or other desired halogenated compound to provide the 3-substituted - 4 - (3-substituted amino - 2 - hydroxypropoxy)-1,2,5-thiadiazole.

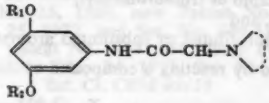
3,729,470

α-(3,5-DIMETHOXY)AMINOACETANILIDES

Madeleine Vaille, born Penciolelli, Brunoy, France, assignor to Orsymonde, Paris, France

No Drawing. Filed May 28, 1970, Ser. No. 41,637
Claims priority, application France, May 20, 1969, 6917560
Int. Cl. C07d *87/42*
U.S. Cl. 260—247.2 A **2 Claims**

The invention provides new phloramine derivatives of the formula



in which R_1 and R_2 are each hydrogen or lower alkyl, and

is an aminoaliphatic or heterocyclic radical, and their salts, which are useful as antispasmodics.

3,729,471

TRIAZINE DERIVATIVES OF BISPHENOLS

Michael Robin, Colonia, and Sheldon R. Schulte, Highland Park, N.J., assignors to Ashland Oil, Inc., Houston, Tex.

No Drawing. Filed Dec. 16, 1969, Ser. No. 885,621
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS **12 Claims**

Reaction products of a triazine compound such as a cyanuric halide and a hindered bisphenol are obtained. Such products are useful as antioxidants and ultraviolet stabilizers in various compositions and materials.

3,729,472

PROCESSES FOR PREPARING CERTAIN PYRIMIDINES

Kenji Ikawa, Osaka-shi, and Fumitaka Takami, Higashiosaka-shi, Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

No Drawing. Filed Aug. 19, 1970, Ser. No. 65,260
Claims priority, application Japan, Aug. 20, 1969, 44/66,130
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.5 R **5 Claims**

2-methyl - 4 - amino - 5 - aminomethylpyrimidine is converted into N,N - dimethyl-N'-(2-methyl-4-amino-5-pyrimidinyl)-formamidine by the treatment with dimethylformamide diethylacetal. The formamidine is heated to

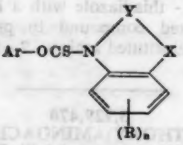
give 7 - methyl - 3,4-dihydropyrimido-(4,5-d)pyrimidine. The formamidine or the pyrimido-pyrimidine is treated with hydrogen sulfide or water to give 2-methyl-4-amino-5-thioformamino-methylpyrimidine or 2-methyl-4-amino-5-formamino-methylpyrimidine.

3,729,473
HYDROQUINOLINE THIOCARBAMIC ACID DERIVATIVES

Horst Böshagen, Haan/Rhineland, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,557
Claims priority, application Germany, Apr. 5, 1969, P 19 17 739.0
Int. Cl. C07d *33/60*
U.S. Cl. 260—283 S **32 Claims**

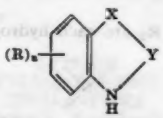
Compounds of the formula:



wherein:

X is sulphur, oxygen, NR^1, CO, CHR^1 or CR^1 wherein R^1 is hydrogen or straight or branched chain lower alkyl,
Y is a straight or branched chain aliphatic moiety of 1 to 3 carbon atoms, or said aliphatic moiety linked to X by a double bond,
R is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylmercapto or trifluoromethyl,
n is 1, 2 or 3, and
Ar is an unsubstituted or substituted aromatic moiety,

are produced by reacting a compound of the formula:



wherein X, Y, R and *n* are as above defined with a thiocarbonic acid ester halide of the formula:

Hal—CS—O—Ar

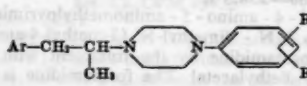
wherein Hal is halogen and Ar is as above defined. These compounds are useful as antimycotics for the treatment of fungal infections which are pathogenic to humans and animals.

3,729,474
N-(ARYL-LOWER ALKYL)-N'-PHENYL-PIPERAZINES AND SALTS

Anton Mentrup, Karl Zeile, Peter Danneberg, and Kurt Schromm, Ingelheim (Rhein), Germany, assignors to Boehringer Ingelheim G.m.b.H., Ingelheim (Rhine), Germany

No Drawing. Continuation of abandoned application Ser. No. 663,973, Aug. 29, 1967. This application Jan. 28, 1971, Ser. No. 110,766
Claims priority, application Germany, Sept. 3, 1966, B 88,772; Aug. 1, 1967, B 93,758
Int. Cl. C07d
U.S. Cl. 260—268 BC **16 Claims**

Racemic and optically active N-(1-bicyclic arylpropyl-2)-N'-phenyl-piperazines of the formula



wherein Ar is 3,4-methylenedioxy-phenyl, indanyl, naphthyl or 1,4-benzodioxanyl, and R_1 and R_2 are each hydrogen, halogen, amino, acetylamino, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylcarbonyl of 1 to 4 carbon atoms or alkylthio of 1 to 4 carbon atoms, and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds are useful as central nervous system depressants.

3,729,475
PHENYL ALKYL AMINE DERIVATIVES

William Robert Nigel Williamson, Farnham, Terence Alan Hicks, Farnborough, and Elaine Hilda Day, Bristol, England, assignors to Lilly Industries Limited, London, England

No Drawing. Continuation-in-part of application Ser. No. 866,026, Oct. 13, 1969. This application Mar. 17, 1971, Ser. No. 125,421
Int. Cl. C07d *29/30*
U.S. Cl. 260—293.73 **2 Claims**

Phenyl alkyl amine derivatives in which the phenyl ring is substituted by a heterocyclic amino group. The compounds possess central nervous system activity and a powerful anti-inflammatory action.

3,729,476
CERTAIN 3-ACETAMIDO OR 3-BENZAMIDO-6-HYDROXY-2-1-H-PYRIDONES

Peter William Austin and Allen Crabtree, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed May 5, 1971, Ser. No. 140,586
Claims priority, application Great Britain, July 10, 1970, 33,635/70
Int. Cl. C07d *31/44*
U.S. Cl. 260—295.5 A **6 Claims**

4 - substituted - 2,6 - dihydroxypyridines and the corresponding N-substituted-2-hydroxypyrid-6-ones containing a 3-amino group are acylated with the halides or anhydrides of organic carboxylic or sulphonic acids to give a range of valuable coupling components; acylation is preferably carried out under an inert atmosphere or on the amino compound as it is formed by reduction of a 3-nitroso, -nitro or -arylazo derivative.

The products obtained by coupling with aromatic diazonium compounds are azo dyestuffs, e.g. disperse dyes for cellulose acetate and polyester fibre, cellulose-reactive or direct dyes for cotton and viscose, metal-complex and acid dyes for wool, and cationic dyes for polyacrylonitrile materials.

3,729,477
CERTAIN 4-(3-AMINO-2-HYDROXYPROPOXY)-1,2,5-THIADIAZOLE-3-CARBOXAMIDES

Burton Kendall Wasson, Valois, Quebec, Canada, assignor to Charles E. Frosst & Co., Kirkland, Quebec, Canada

No Drawing. Application Apr. 21, 1969, Ser. No. 818,090, which is a continuation-in-part of application Ser. No. 731,333, May 22, 1968. Divided and this application Sept. 9, 1971, Ser. No. 179,148
Int. Cl. C07d *91/68*
U.S. Cl. 260—302 D **3 Claims**

4 - [3 - (substituted amino) - 2 - hydroxypropoxy]-1,2,5-thiadiazole compounds, substituted in the 3-position of the thiadiazole nucleus exhibit β-adrenergic blocking properties and thus are useful in the management of angina pectoris are described. The products are prepared by reaction of 3-carboxy-4-allyloxy-1,2,5-thiadiazole with N-bromosuccinimide followed by esterification to give the alkyl ester of 3-carboxy-4-(3-bromo-2-hydroxypropoxy)-1,2,5-thiadiazole which upon treatment with an amine forms a 3-carbamoyl-4-(3-substituted amino-2-hydroxypropoxy)-1,2,5-thiadiazole.

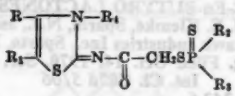
3,729,478

CERTAIN 2-IMINOTHIAZOLE PHOSPHATES AND PHOSPHONATES

Llewellyn W. Fancher, Orinda, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Oct. 29, 1971, Ser. No. 198,011
Int. Cl. C07d *91/26*
U.S. Cl. 260—306.7 37 Claims

Compounds of the formula



in which R is hydrogen or alkyl; R_1 is hydrogen or alkyl; R_2 is alkyl or alkoxy; R_3 is alkoxy; R_4 is alkyl, alkenyl, alkynyl, benzyl or carbamoyloxyalkylene and the use of these compounds as insecticides and acaricides.

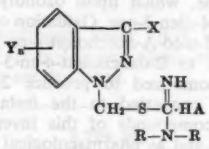
3,729,479

2-(SUBSTITUTED INDAZOLYL-N'-METHYL)-2-THIOPSEUDOUREA SALTS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of application Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 6, 1971, Ser. No. 140,958
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C 5 Claims

Compounds that have the structural formula



wherein X represents hydrogen or halogen; Y represents halogen or nitro; each R represents hydrogen or a lower alkyl group; *n* represents an integer in the range of zero to 2; and A represents the anion of a strong acid, are used to control the growth of fungi. Among the most active of these compounds are 2-(5-nitroindazolyl-N^1-methyl)-2-thiopseudourea hydrochloride and 2-(3-chloro-6-nitroindazolyl-N^1-methyl)-2-thiopseudourea hydrochloride.

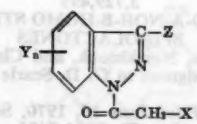
3,729,480

N'-(SUBSTITUTED ACETYL) INDAZOLES AND THEIR USE IN PESTICIDAL COMPOSITIONS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 589,235, Oct. 25, 1966, now Patent No. 3,637,736, dated Jan. 25, 1972, and Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 24, 1971, Ser. No. 146,486
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C 5 Claims

Compounds that have the structural formula



wherein X represents halogen, phenoxy, or thiocyanato; Y represents halogen or nitro; Z represents halogen or hydrogen; and *n* is an integer in the range of zero to 2 can be used to control the growth of various plant and animal pests. Among the most active of these compounds is N^1-chloroacetyl-6-nitroindazole.

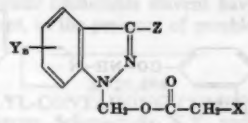
3,729,481

N^1-(SUBSTITUTED ACETOXYMETHYL)INDAZOLES AND THEIR USE IN PESTICIDAL COMPOSITIONS

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 589,235, Oct. 25, 1966, now Patent No. 3,637,736, dated Jan. 25, 1972, and Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 24, 1971, Ser. No. 146,487
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C 5 Claims

Compounds that have the structural formula



wherein X represents halogen or thiocyanato; Y represents halogen or nitro; Z represents halogen or hydrogen; and *n* is an integer in the range of zero to 2 can be used to control the growth of various plant and animal pests. Among the most active of these compounds is N^1-thiocyanatoacetoxymethyl-6-nitroindazole.

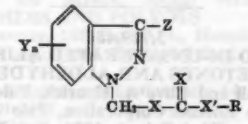
3,729,482

ALKYL (SUBSTITUTED INDAZOLYL-N^1-METHYL) THIOCARBONATES AND THEIR USE AS PESTICIDES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Continuation-in-part of applications Ser. No. 589,235, Oct. 25, 1966, now Patent No. 3,637,736, dated Jan. 25, 1972, and Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, dated Feb. 8, 1972. This application May 24, 1971, Ser. No. 146,488
Int. Cl. C07d *49/18*
U.S. Cl. 260—310 C 8 Claims

Compounds that have the structural formula



wherein one of the symbols X and X' represents sulfur and the other represents oxygen; Y represents halogen or nitro; Z represents hydrogen or halogen; R represents a lower alkyl group; and *n* represents an integer in the range of zero to 2 can be used to control the growth of various plant and animal pests. Among the most active of these compounds are S-ethyl O-(5-chloroindazolyl-N^1-methyl)thiolcarbonate and O-ethyl S-(3-chloro-6-nitroindazolyl-N^1-methyl)dithiocarbonate.

3,729,483

PREPARATION OF N-VINYL CARBAZOLE BY TRANSVINYLATION

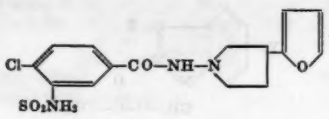
Richard E. Wolf, Prospect Heights, and Susan B. Gorman, Des Plaines, Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

No Drawing. Filed June 4, 1971, Ser. No. 150,236
Int. Cl. C07d *27/68*
U.S. Cl. 260—315 9 Claims

N-vinyl carbazole is produced by a transvinylation reaction of carbazole with an alkyl or aryl vinyl ether in the presence of mercuric salt such as mercuric acetate or mercuric oxide, the reaction being carried out in the presence of an acidic catalyst constituted by any relatively strong acid.

3,729,484
1-(3-SULFAMOYL-4-CHLORO-BENZAMIDO)-3-(2-FURYL)-PYRROLIDINE
Laszlo Beregi, Boulogne-sur-Seine, Pierre Hugon, Rueil-Malmaison, and Michel Laubie, Vaucresson, France, assignors to Societe en nom Collectif "Science Union et Cie, Societe Francaise de Recherche Medicale," Suresnes, France
No Drawing. Filed Feb. 19, 1971, Ser. No. 117,053
Claims priority, application Great Britain, Mar. 10, 1970, 11,430/70
Int. Cl. C07d 27/04
U.S. Cl. 260—326.3 1 Claim

Furan compound of the formula:



This compound possesses diuretic and antihypertensive properties.

3,729,485
N-HALOALKENYLCYCLOAMIDINES
Hartmund Wollweber and Wilhelm Stendel, Wuppertal-Elberfeld, and Edgar Enders, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Oct. 21, 1970, Ser. No. 82,828
Claims priority, application Germany, Nov. 4, 1969, P 19 55 481.5
Int. Cl. C07d 27/04
U.S. Cl. 260—326.85 10 Claims

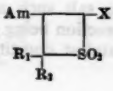
N-haloalkenylphenylcycloamidines, e.g. wherein each halogen atom of the alkenyl group is attached to a double-bonded carbon atom and wherein the phenyl group is substituted by from one to four halogen, trifluoromethyl, difluoromethyl, lower alkyl or alkenyl radicals, which possess acaricidal properties, especially animal acarid ectoparasiticidal properties, and processes for their preparation.

3,729,486
EPITHIO DI-UNSATURATED ALIPHATIC KETONES AND ALDEHYDES
John B. Siddall and Clive A. Henrick, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.
No Drawing. Filed Feb. 1, 1971, Ser. No. 111,650
Int. Cl. C07d 59/00, 1/00
U.S. Cl. 260—327 E 10 Claims

Di-unsaturated aliphatic ketones and aldehydes substituted with oxido, epithio, hydroxy and ethers and esters thereof, or halogen useful for the control of insects.

3,729,487
2-HALO-3-AMINOTHIETANE AND 2H-THIETE-1,1-DIOXIDES
Melvin Harris Rosen, Florham Park, and Herbert Morton Blatter, Summit, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 768,546, Oct. 17, 1968, now Patent No. 3,644,632, dated Feb. 22, 1972. This application Dec. 16, 1970, Ser. No. 98,936
Int. Cl. A61k 27/00; C07d 61/00
U.S. Cl. 260—327 R 4 Claims

2 - halo - 3 - aminothiethane- or 2H-thiete-1,1-dioxides, e.g. those of the formula



X=halogen
Am=dialkylamino or alkyleneimino
$R_{1,2}$=H or alkyl

or their 3-dehydro-derivatives exhibit anti-inflammatory effects.

3,729,488
PREPARATION OF MONOMERIC 2-CYANO-2-En-BUTYRO LACTONES
Rudolf H. E. Klemke, Sparta, N.J., assignor to Mohawk Industries Inc., Sparta, N.J.
No Drawing. Filed Oct. 14, 1970, Ser. No. 80,768
Int. Cl. C07d 5/06
U.S. Cl. 260—343.6 6 Claims

Monomeric 2-cyano-2-enbutyrolactones are prepared for use as adhesive compositions in bone and like surgery.

3,729,489
2-OXACHOLESTEROL AND INTERMEDIATES
Robert J. Chorvat, Arlington Heights, Raphael Pappo, Skokie, and Mike G. Scaros, Arlington Heights, Ill., assignors to G. D. Searle & Co., Chicago, Ill.
No Drawing. Continuation-in-part of application Ser. No. 821,948, May 5, 1969, now Patent No. 3,644,342. This application Dec. 17, 1971, Ser. No. 209,384
Int. Cl. C07d 7/04, 7/20
U.S. Cl. 260—343.2 S 7 Claims

ABSTRACT OF THE DISCLOSURE

Cholest-4-en-3-one is allowed to react with ethyl formate to produce the intermediate 2-hydroxymethylene-cholest-4-en-3-one, which upon ozonolysis, yields 2-hydroxycholesta-1,4-dien-3-one. Oxidation of that compound affords 1-oxo-1,2-seco-A-norcholest-4-en-3-oic acid which then is reduced to 2-oxocholest-4-en-3-one. The latter compound is isomerized to produce 2-oxacholest-5-en-3-one which is converted to the instant 2-oxacholest-5-en-3-ol. The compounds of this invention are useful as intermediates and as pharmacological agents as is evidenced by their central nervous system-affective, anti-ulcerogenic and hypocholesterolemic activity.

3,729,490
1-PHENYL-3-PHTHALANCARBOXYLIC ACIDS AND INTERMEDIATES THEREOF
Francis J. Petracek, Bloomington, and Nobuyuki Sugisaka, New Brighton, Minn., assignors to Riker Laboratories, Inc., Northridge, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 72,232, Sept. 14, 1970, which is a division of application Ser. No. 780,168, Nov. 29, 1968, now Patent No. 3,557,147, dated Jan. 19, 1971. This application June 21, 1972, Ser. No. 264,881
Int. Cl. C07d 7/24
U.S. Cl. 260—343.2 R 8 Claims

Optionally substituted 1,4-dihydro - 1 - phenyl - 3H - 2-benzopyran-3-one, 4-bromo - 1,4 - dihydro - 1 - phenyl-3H-2-benzopyran - 3 - one and 4-chloro - 1,4 - dihydro-1-phenyl-3H-2-benzopyran-3-one intermediates are useful for the synthesis of pharmacologically active compounds.

3,729,491
3,5-DIOXO-A-NOR-B-HOMO STEROIDAL SPIROLACTONES
Paul D. Klimstra, Northbrook, and Charles S. Markos, Skokie, Ill., assignors to G. D. Searle & Co., Chicago, Ill.
No Drawing. Filed June 15, 1970, Ser. No. 46,546
Int. Cl. C07d 5/06
U.S. Cl. 260—343.6 3 Claims

Irradiation of 3-keto-4β,5β-epoxy steroidal lactones with ultraviolet light affords the corresponding 3,5-dioxo-A-nor-B-homo compounds, which have valuable pharmacological properties, e.g. desoxycorticosterone acetate-inhibitory and anti-estrogenic.

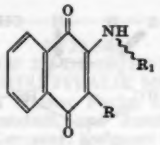
3,729,492

NAPHTHOQUINONE DERIVATIVES

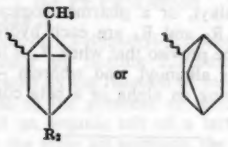
Karl Bernauer, Allschwil, and Janos Borgulya and Erika Böhni, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed July 9, 1971, Ser. No. 162,029
Claims priority, application Switzerland, July 17, 1970, 10,905/70
Int. Cl. C07c 87/02, 87/64, 91/00, 93/00
U.S. Cl. 260—396 R 20 Claims

Novel naphthoquinone compounds represented by the formula



wherein R is hydrogen, halogen, or lower alkoxy, R_1 is a residue of the formula



wherein R_2 is hydrogen, lower alkyl, optionally substituted phenyl or phenyl lower alkyl; and a process for their preparation are described.

3,729,493

DI-(NITRODIPHENYLAMINESULFONAMIDO) COMPOUNDS

David H. Wilcox, Jr., Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 4, 1967, Ser. No. 672,709
Int. Cl. C07c 143/80
U.S. Cl. 260—397.7 10 Claims

Water insoluble compounds prepared by condensing the product of a nitrochlorobenzene and a diamine with an aniline compound are useful as dyes for hydrophobic textile materials.

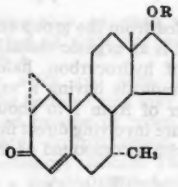
3,729,494

7α-METHYLANDROSTENOLONES

Helmut Hofmeister, Hermann Steinbeck, and Rudolf Wiechert, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,152
Claims priority, application Germany, Dec. 6, 1969, P 19 61 906.8
Int. Cl. C07c 169/22
U.S. Cl. 260—397.4 8 Claims

7α-methyl-1α,2α-methylene-androstenolones of the formula



possess anabolic activity with minimal associated androgenic activity.

3,729,495

PROCESS FOR THE PREPARATION OF 9α-CHLORO-11β-HYDROXY STEROIDS

Emanual Kaspar, deceased, late of Kamen, Germany, by Elisabeth Barbara Kaspar, main heir, Kamen, and Rainer Philippson, Bergkamen, Germany, assignors to Schering A.G., Berlin, Germany

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,149
Claims priority, application Germany, Mar. 7, 1970, P 20 11 559.7
Int. Cl. C07c 169/34
U.S. Cl. 260—397.45 3 Claims

9α-chloro-11β-hydroxy steroids are produced by the reaction of a $\Delta^{9(11)}$-steroid with tert.-butyl hypochlorite in an inert, water immiscible solvent having a high dielectric constant, in the presence of perchloric acid.

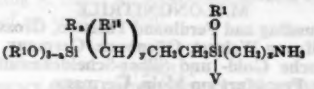
3,729,496

DISILYL-CONTAINING COMPOUNDS

Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Aug. 16, 1971, Ser. No. 172,292
Int. Cl. C07f 7/18
U.S. Cl. 260—448.8 R 7 Claims

A novel class of silicone compounds of the formula,



where R, R^1 and R^{18} are hydrocarbon radicals, V is selected from monovalent hydrocarbon radicals and monovalent alkoxy and aryloxy radicals, and the symbols *y*, *x* and *a* are whole numbers that vary from 0 to 20, 2 to 20 and 0 to 2, respectively. This novel class of compounds are useful as glass sizing agents, as flocculants for colloidal organic matter and as detergent resistant agents in various compositions.

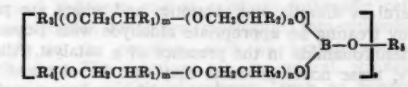
3,729,497

BARATE ESTERS PREPARED BY SUCCESSIVE REACTIONS OF BORIC ACID WITH GLYCOL MONOETHERS AND POLYOLS

Arthur W. Sawyer, 158 Earl Ave., Hamden, Conn., and David A. Csejka, 495 Derby-Milford Road, Orange, Conn.

No Drawing. Original application July 14, 1967, Ser. No. 653,337. Divided and this application Nov. 5, 1970, Ser. No. 87,306
Int. Cl. C07f 5/04
U.S. Cl. 260—462 R 3 Claims

Borate esters of the formula:



wherein R_1 and R_2 are hydrogen or methyl; R_3 and R_4 are each an independently selected alkyl group having from 1 to 20 carbon atoms; R_5 is the organic residue exclusive of reactive hydroxyl groups of a polyol of the formula:

$$[H(OCH_2CHR_7)_z]_sN(R_8)_{3-s}$$

wherein *s* is an integer of from 2 to 3 inclusive, *z* is an integer of from 1 to 10 inclusive, R_7 is selected from the group consisting of hydrogen and methyl and R_8 is selected from the group consisting of hydrogen and alkyl of from 1 to 4 carbon atoms, and *n* and *m* are positive integers independently selected in each chain and whose sum in each chain is from 2 to 20 are prepared by successively reacting boric acid with a glycol monoether and a polyol. These esters are useful as stabilizers and corrosion inhibitors for lubricants and non-aqueous hydraulic fluids.

3,729,498
PROCESS FOR THE PREPARATION OF ORGANIC DINITRILES

Yoshiyasu Masada and Teruo Yasui, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Okayama Prefecture, Japan

No Drawing. Filed Sept. 24, 1969, Ser. No. 860,828
Claims priority, application Japan, Sept. 27, 1968, 43/70,314, 43/70,316; Oct. 26, 1968, 43/78,137; Nov. 2, 1968, 43/80,127; Dec. 4, 1968, 43/88,882; Feb. 6, 1969, 44/8,894; June 27, 1969, 44/51,246
Int. Cl. C07c *121/20, 121/26*
U.S. Cl. 260—465.8 D 16 Claims

Organic dinitriles are prepared in high yield with high content of 1,4-isomers by vapor phase dimerization of acrylonitrile in the presence of a novel ruthenium-containing catalyst comprising, as the first component, a member of the group consisting of metal ruthenium and ruthenium compounds, and as the second component, a member of the group consisting of metal bismuth, bismuth compounds, antimony compounds, elementary arsenic, arsenic compounds, and phosphorus compounds.

3,729,499
PROCESS FOR THE PRODUCTION OF MALONONITRILE

Theodor Lussling and Ferdinand Theissen, Gross-Auheim, and Wolfgang Weigert, Offenbach, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Filed Apr. 1, 1969, Ser. No. 812,308
Claims priority, application Germany, Apr. 5, 1968, P 17 68 154.8; Mar. 5, 1969, P 19 11 174.1
Int. Cl. C07c *121/22*
U.S. Cl. 260—465.8 R 17 Claims

Malononitrile is prepared by the short time high temperature reaction of gaseous acetonitrile and cyanogen chloride in the molar ratio of acetonitrile to cyanogen halide of above 1 characterized in that the well mixed reaction components are reacted at an average temperature below 800° C. and the reaction is quenched to condense acetonitrile and malononitrile by introducing a cooling medium into the reaction system.

3,729,500
1-CYANO-2-SUBSTITUTED ETHENE-SULFONAMIDES

Edward J. Cragoe, Jr., Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Sept. 3, 1970, Ser. No. 69,452
Int. Cl. C07c *21/66*
U.S. Cl. 260—465 D 7 Claims

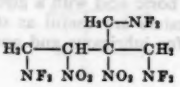
Novel 1-cyano-2-substituted ethenesulfonamides which are useful as diuretic and saluretics and which are prepared by treating an appropriate aldehyde with 1-cyanomethanesulfonamide in the presence of a catalyst. Alternatively, these novel products may also be obtained by treating an appropriate aldehyde with a primary amine followed by the treatment of the intermediate thus obtained with 1-cyanomethanesulfonamide.

3,729,501
DIFLUOROAMINO ALIPHATIC COMPOUNDS

Gilson H. Rohrback, Whittier, and James H. Canfield, Anaheim, Calif., assignors to General Electric Company

No Drawing. Filed Aug. 25, 1961, Ser. No. 136,134
Int. Cl. C07c *77/02, 87/22*
U.S. Cl. 260—467 2 Claims

1. 1,4-bis(difluoroamino)-2-nitro-3-nitratobutane.
2. The compound represented by the formula:

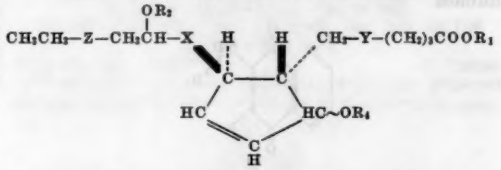


3,729,502
PROSTANOIC ACID DERIVATIVES

Philip F. Beal III and John E. Pike, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 480,107, Aug. 16, 1965, and a division of application Ser. No. 520,876, Jan. 17, 1966, both now abandoned. This application Oct. 16, 1970, Ser. No. 81,593
Int. Cl. C07c *61/32, 69/74*
U.S. Cl. 260—468 D 11 Claims

1. A prostanoic acid derivative of the formula:



wherein X, Y, and Z are $-CH_2CH_2-$, wherein X is trans-CH=CH—, and Y and Z are $-CH_2CH_2-$, or wherein X is trans-CH=CH—, Y is cis-CH=CH—, and Z is $-CH_2CH_2-$ or cis-CH=CH—, wherein R_1 is hydrogen, lower alkyl, or a pharmacologically acceptable cation, wherein R_2 and R_4 are each hydrogen or lower alkanoyl, with the proviso that when R_4 is lower alkanoyl, R_2 is also lower alkanoyl, and wherein ~ is a generic expression denoting an alpha or a beta configuration for the OR_4 moiety.

3,729,503
AROMATIC ESTERS OF TERPENE ALCOHOLS

Henry G. Gribou, Chesterfield, and Alfred A. Schleppnik, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Apr. 28, 1969, Ser. No. 819,966
Int. Cl. C07c *69/76, 69/78*
U.S. Cl. 260—476 C 7 Claims

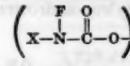
Esters of terpene alcohols with organic acids are prepared in neutral or alkaline medium in order to avoid acid catalyzed dehydration and/or skeletal rearrangements. Organic acid halides, anhydrides or esters are used as acylating agents under the proper conditions. The terpene esters have a characteristic long lasting floral-woody aroma and are useful in the production of perfumes and perfume products.

3,729,504
BIS-N,N-DIFLUOROCARBAMATES

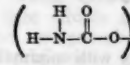
Vytautas Grakauskas, Arcadia, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

No Drawing. Continuation of application Ser. No. 554,947, May 31, 1966, which is a continuation-in-part of application Ser. No. 404,210, Oct. 14, 1964, both now abandoned. This application July 6, 1970, Ser. No. 56,140
Int. Cl. C07c *25/04*
U.S. Cl. 260—482 B 2 Claims

Novel fluorinated compounds of the formula:



wherein X is selected from the group consisting of hydrogen and fluorine, R is an organic radical selected from the group consisting of hydrocarbon, halohydrocarbon and nitrohydrocarbon radicals having a valency equal to *n*, and *n* is an integer of from 1 to about 10, and process for their manufacture involving direct fluorination through reacting fluorine with a compound of the formula:



wherein R and *n* have the foregoing definitions.

3,729,505
POLYOLS AND POLYURETHANES DERIVED FROM 5-PENTANOLIDES
Katsumi Hayashi, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio
No Drawing. Filed Nov. 9, 1970, Ser. No. 88,141
Int. Cl. C08g *17/017*
U.S. Cl. 260—484 A 8 Claims

Polyols are prepared by the reaction of 5-pentanolides (delta-valerolactones) with a polyhydroxy compound in the presence of an alkaline reagent. These polyols may be reacted with polyisocyanates to form elastomeric polyurethanes.

3,729,506
PRODUCTION OF 2,2-DIMETHYL-1,3-PROPANEDIOLHYDROXYPIVALIC MONOESTER
Franz Merger and Werner Fuchs, Ludwigshafen, Gerd Duembgen, Dannstadt, and Joachim Oberhansberg, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,090
Claims priority, application Germany, Nov. 21, 1969, P 19 58 463.5; Jan. 8, 1970, P 20 00 699.9
Int. Cl. C07c *69/66*
U.S. Cl. 260—484 R 9 Claims

The production of 2,2-dimethyl-1,3-propanediolhydroxypivalic monoester by heating 2,2-dimethyl-3-hydroxypropanal (prepared by the reaction of formaldehyde with isobutyraldehyde in the presence of tertiary amines) in the presence of an organic salt of a tertiary amine. As compared with the prior art methods, the process according to the invention gives 2,2-dimethyl-1,3-propanediolhydroxypivalic monoester by a simpler and more economical method, in higher purity and with a higher yield with reference to the starting material and with a higher space-time yield of pure end product. The compound which can be prepared by the process according to the invention is a more valuable starting material for the production of synthetic resins and plasticizers.

3,729,507
PURIFICATION OF ALKANE SULFONATE PRODUCTS
Phillip M. Beazley, Littleton, and Charles J. Norton, Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Aug. 10, 1970, Ser. No. 62,462
Int. Cl. C07c *143/02, 143/04*
U.S. Cl. 260—513 B 9 Claims

Alkane sulfonate mixtures are separated and purified by dissolving crude sulfonate mixture in hot water, heating to 30–300° C., filtering as necessary, crystallizing to form alkane mono-sulfonate of greater than 90% purity from one crystallization. Disulfonate is recovered by concentrating the filtrate to dryness and subsequent separation from inorganic salts by solution in hot methanol.

3,729,508
SULFONYLBENZOIC ACIDS
Carl Ziegler, Glenside, and James M. Sprague, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Nov. 20, 1969, Ser. No. 878,576
Int. Cl. C07c *147/06*
U.S. Cl. 260—515 A 7 Claims

Sulfonylbenzoic acids and salts, esters and amides thereof wherein the benzene ring may be either unsubstituted or substituted by one or more lower alkyl, halo, trihalomethyl, nitro, hydroxyamino, carboxy, amino, halosulfonyl or sulfamoyl radicals. The products are prepared by treating a suitable thiobenzoic acid or sulfinylbenzoic acid with an oxidizing agent and are useful as uricosuric agents in the treatment of gout and gouty arthritis.

3,729,509
(MONO- AND DIACYLVINYL)ARYL ALKANOIC (AND ALKENOIC) ACIDS
Everett M. Schultz, Ambler, Pa., assignor to Merck & Co., Inc., Rahway, N.J.
No Drawing. Filed Apr. 20, 1970, Ser. No. 30,303
Int. Cl. C07c *65/20*
U.S. Cl. 260—515 R 5 Claims

[(Mono- and diacylvinyl)aryl]alkanoic (and alkenoic) acids and the salts, esters and amide derivatives thereof, wherein the aryl ring may be substituted by one or two halogen, lower alkyl or hydrocarbylene substituents. The products are diuretic and saluretic agents which may be prepared by treating a formylaryl alkanoic (or alkenoic) acid with a suitable ketone or diketone in the presence of a base.

3,729,510
PROCESS FOR HYDROXYALKYL ARYLAMIDES AND IMIDES
Richard V. Norton, Wilmington, Del., assignor to Sun Oil Company, Philadelphia, Pa.
No Drawing. Filed Apr. 19, 1971, Ser. No. 135,380
Int. Cl. C07c *103/78;* C07d *27/16*
U.S. Cl. 260—326 A 8 Claims

A process for hydroxyalkyl aryl amides which comprises heating at reflux an alkanolamine with the ammonium salt of an aromatic acid.

3,729,511
N-PENTACHLOROPHENOXY-METHYL-N-HYDROCARBON-AMINES
Joseph W. Baker, Kirkwood, and Ignatius Schumacher, Webster Groves, Mo., assignors to Monsanto Company, St. Louis, Mo.
No Drawing. Filed July 13, 1970, Ser. No. 54,606
Int. Cl. C07c *93/06*
U.S. Cl. 260—570.7 5 Claims

Halophenoxymethylamines as new chemical compounds. These compounds have been found to be useful in the control of bacteria.

3,729,512
HOMOGENEOUS RUTHENIUM-CATALYZED REDUCTION OF NITRO COMPOUNDS
Francois L'Eplattenier and Fausto Calderazzo, Geneva, Switzerland, assignors to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Nov. 27, 1968, Ser. No. 779,648
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 6 Claims

A catalytic process for the reduction of nitro compounds to the corresponding amines is described. The process uses for the reduction a mixture of carbon monoxide and hydrogen and as catalysts ruthenium carbonyls or compounds which are transformed into ruthenium carbonyls in the reaction, such as tris(acetylacetonato) ruthenium. The reactions are, in general, strongly exothermic, and additional solvents, such as benzine, are desirable. Good yields of the amines are obtained and the operation is carried out at moderate temperatures, from 130° to 160° C. under moderate pressure, for example 200 to 300 atmospheres.

3,729,513
TRICYCLO[4.3.1.1^{3,8}]UNDECANE-4-ONE
Gilbert H. Berezin, West Chester, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Application July 31, 1969, Ser. No. 846,620, which is a continuation-in-part of application Ser. No. 758,631, Sept. 9, 1968. Divided and this application Feb. 9, 1971, Ser. No. 114,086
Int. Cl. C07c *49/26*
U.S. Cl. 260—586 A 1 Claim

Tricyclo[4.3.1.1^{3,8}]undecane - 4 - one, useful as an intermediate in the preparation of anti-viral 4-amino- and

4-aminomethyl-tricyclo[4.3.1.1^{3,8}]undecanes, is prepared from 2-aminomethyl - 2 - adamantanol. The latter compound is prepared from methylene adamantane or adamantanone.

3,729,514

NOVEL CHEMICAL COMPOUNDS AND PROCESS

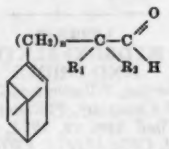
John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Original application Nov. 4, 1969, Ser. No. 874,038. Divided and this application Apr. 2, 1971, Ser. No. 130,535

Int. Cl. C07c *45/00, 47/38*

U.S. Cl. 260—598 4 Claims

Novel aldehydes having the structure:



wherein R_1 is hydrogen or lower alkyl, R_2 is lower alkyl and *n* is 1 or 2, lower alkyl acetals thereof; lower alkylene cyclic acetals thereof; mixtures thereof and novel process for the production thereof.

3,729,515

DIMERIZATION

Neville Leverne Cull, Baker, Elroy Merle Gladrow, Baton Rouge, Ralph Burgess Mason, Denham Springs, and Glen Porter Hamner, Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed Jan. 10, 1967, Ser. No. 608,265

Int. Cl. C07c *47/26*

U.S. Cl. 260—602 14 Claims

The present disclosure concerns the use of Zn-exchanged, Mg-exchanged, Zn and Co-exchanged, Mg and Co-exchanged and Mg, Zn and Co-exchanged crystalline zeolite molecular sieves with effective pore openings of 4 to 15 Angstrom units ("Zeolite A," "Zeolite X" and "Zeolite Y" exchanged sieves) to dimerize C_2 to C_{20} saturated, aliphatic aldehydes and C_3 to C_{20} saturated, aliphatic ketones. These materials are known compounds which, upon hydrogenation to yield 1,3-glycols, are useful as insect repellents and synthetic lubricants intermediates, plasticizers, etc.

3,729,516

PROCESS FOR TRIS (HYDROXYMETHYL) PHOSPHINE

Richard Frederick Stockel, and William Frank Herbes, both of Bridgewater Township, Somerset County, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Nov. 27, 1970, Ser. No. 93,402

Int. Cl. C07f *9/50*

U.S. Cl. 260—606.5 P 4 Claims

Production of tris(hydroxymethyl) phosphine of high purity and substantially free of water. Phosphine is reacted with about 3 moles of formaldehyde in the presence of a solvent which is a low molecular weight aliphatic alcohol of from one to three carbon atoms, at elevated temperature and pressure.

3,729,517

SYNTHESIS OF DIALKARYL SULFONE

William J. I. Bracke, Brussels, Belgium, assignor to Cosden Oil & Chemical Company, Big Spring, Tex.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,104

Int. Cl. C07c *147/01*

U.S. Cl. 260—607 A 17 Claims

Dialkaryl sulfones are formed by treating the first stage alkaryl sulfonic acid with more alkaryl hydrocarbon in a second stage, the second stage reaction being initiated by P_2O_5, removing the water formed in the reaction by azeotropic distillation of some of the excess hydrocarbon from the reaction mixture as the sulfone is formed.

3,729,518

NOVEL THIA-ALKANOLS

Herbert Lepper Cologne-Mulheim, Wilfried Umbach, Langenfeld, Rhineland, and Werner Stein, Erkrath-Unterbach, Germany, assignors to Henkel & Cie., GmbH, Dusseldorf-Holthausen, Germany

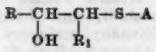
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,214

Claims priority, application Germany, Sept. 25, 1969, P 19 48 385.3

Int. Cl. C07c *149/14*

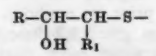
U.S. Cl. 260—609 A 1 Claim

Novel thia-alkanols of the formula



(I)

wherein R is an aliphatic group of 1 to 22 carbon atoms, R_1 is selected from the group consisting of hydrogen and aliphatic group of 1 to 21 carbon atoms with the sum of carbon atoms in R and R_1 being 4 to 22 and R and R_1, taken together with the ethylene group to which they are attached form a cycloaliphatic ring of 6 to 12 carbon atoms and A is selected from the group consisting of aliphatic and cycloaliphatic of 6 to 24 carbon atoms optionally substituted with one or more groups of the formula



useful as pesticides, lubricant additives and intermediates for surfactants and to a novel process for their preparation.

3,729,519

PROCESS FOR THE PREPARATION OF ALKYL SUBSTITUTED RESORCINOLS

Arnold Brossi, Verona, and Antonino Focella and Sidney Teitel, Clifton, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application Jan. 22, 1969, Ser. No. 793,191. Divided and this application Sept. 17, 1971, Ser. No. 181,577

Int. Cl. C07c *43/22, 41/00*

U.S. Cl. 260—613 R 2 Claims

Preparation of 5-alkyl substituted resorcinols such as Olivetol from aliphatic aldehyde and intermediates in this process.

3,729,520

PROCESS FOR THE PREPARATION OF UNSATURATED FATTY ALCOHOLS

Horst Rutzen, Dusseldorf-Holthausen, and Wilhelm Rittmeister, Erkrath-Unterbach, Germany, assignors to Henkel & Cie, GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Continuation-in-part of application Ser. No. 561,042, June 28, 1966. This application May 26, 1969, Ser. No. 827,881

Claims priority, application Germany, July 24, 1965, H 56,673

Int. Cl. C07c *29/00, 33/02*

U.S. Cl. 260—638 A 8 Claims

Process for the preparation of unsaturated fatty alcohols by selective hydrogenation of unsaturated fatty acids and esters thereof with aliphatic alcohols at 250–330° C. and hydrogen pressure of 100–500 atmospheres, the amount of hydrogen being 10–100 Nm.^{3} per liter of starting material, in presence of zinc-aluminum oxygen containing a catalyst reductively pretreated at elevated temperatures.

3,729,521
PROCESS FOR THE DISPROPORTIONATION OF PETROLEUM HYDROCARBONS

Louis C. Gutberlet, Crown Point, and Ralph J. Bertolacini, Chesterton, Ind., and Harry M. Brennan, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Sept. 1, 1970, Ser. No. 68,656
Int. Cl. C07c *3/00*
U.S. Cl. 260—672 T 39 Claims

The process comprises contacting in a reaction zone a petroleum hydrocarbon fraction with a catalytic composition under suitable disproportionation conditions, said catalytic composition comprising a member selected from the group consisting of (1) a metal of Group VI–B of the Periodic Table of Elements, (2) a metal of Group VIII of the Periodic Table, (3) the oxide of a metal of Group VI–B, (4) the sulfide of a metal of Group VI–B, (5) the oxide of a metal of Group VIII, (6) the sulfide of a metal of Group VIII, and (7) mixtures thereof deposited upon a solid acidic cracking support, which support comprises an ultrastable, large-pore crystalline aluminosilicate material and a refractory inorganic oxide. The preferred metal of Group VI–B is molybdenum and the preferred metal of Group VIII is cobalt. The catalyst is subjected to a sulfur-providing compound to inhibit demethanation.

3,729,522
METHOD FOR PREPARING LOW COLOR POLYPHENYLS AND HALOGENATED POLYPHENYLS

Gene L. Arnett, Weaver, and William B. Dunlap, Anniston, Ala., assignors to Monsanto Company, St. Louis, Mo.

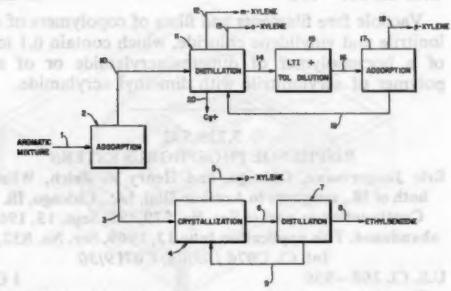
No Drawing. Filed Dec. 2, 1970, Ser. No. 94,587
Int. Cl. C07c *7/00*
U.S. Cl. 260—674 R 11 Claims

A process for the treatment of polyphenyls to improve the color thereof wherein crude polyphenyls comprised predominantly of terphenyl and quaterphenyl are contacted with alkali metal at a temperature of about 225° C. and for a period of time sufficient to substantially reduce the color of the polyphenyl. Halogenated polyphenyls prepared from the treated polyphenyl have exceptionally good color and are particularly useful as plasticizers in color critical applications.

3,729,523
RECOVERY OF ISOMERS FROM AROMATIC MIXTURES

Philip Grandio, Jr., and Paul T. Allen, Beaumont, Tex., assignors to Mobil Oil Corporation

Filed Apr. 14, 1971, Ser. No. 133,929
Int. Cl. C07c *7/02, 15/08*
U.S. Cl. 260—674 A 12 Claims

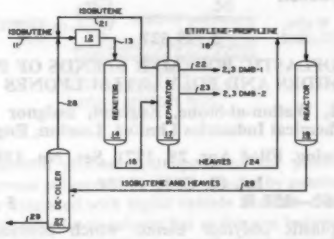


Aromatic mixtures which contain para-xylene, ortho-xylene and meta-xylene and ethylbenzene as well as C_9 and higher impurities are separated for recovery of the said components by the steps including subjecting the mixture to adsorption or chromatography to provide (1) a mixture of para-xylene and ethylbenzene, and (2) a mixture of meta-xylene, ortho-xylene and C_9 and other components of the mixture, crystallizing the mixture of para-xylene and ethylbenzene under such conditions as to obtain crystals of para-xylene and then distilling the mother liquor to obtain the ethylbenzene. The mixture of meta-xylene, ortho-xylene and other components is distilled in one embodiment to remove all of the meta-xylene and ortho-xylene. In a separate embodiment only portions of the meta- and ortho-xylene are removed by distillation and the latter is subjected to low temperature isomerization with toluene dilution followed by a second adsorption step to provide additional para-xylene. The advantages of the process are that the production of all isomers is feasible and all useful isomers are recovered in high purity.

3,729,524
CONVERSION OF OLEFINS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company

Original application Nov. 6, 1969, Ser. No. 874,147, now Patent No. 3,660,517. Divided and this application Nov. 23, 1971, Ser. No. 201,388
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D 6 Claims



Neohexene is produced by contacting isobutene and ethylene with a catalyst comprising a mixture of tungsten oxide on silica and magnesium oxide.

3,729,525
DISPROPORTIONATION PROCESS

Robert L. Banks and Filippo Pennella, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,020
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D 5 Claims

The conversion of disproportionatable olefins is improved when using a catalyst comprising rhenium oxide and alumina by mixing with the feed material an effective amount of dicyclopentadiene or an alkyl-substituted derivative thereof.

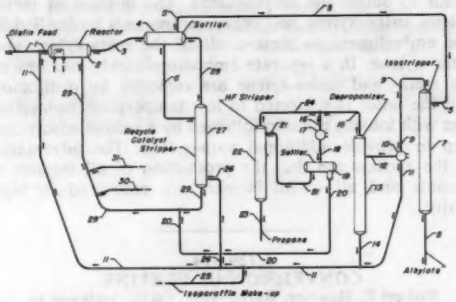
3,729,526
HYDROGEN FLUORIDE STRIPPING TO SEPARATE HYDROCARBONS AND ALKYL FLUORIDES IN ALKYLATION PROCESS

Robert F. Anderson, La Grange Park, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Apr. 5, 1971, Ser. No. 131,198
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.48 6 Claims

The reaction mixture from HF alkylation of isoparaffin with an olefin-acting reactant is separated into a hydrocarbon and catalyst phases, unreacted isoparaffin from

the hydrocarbon phase strips the catalyst phase to separate an overhead stream of hydrocarbons and alkyl fluorides, and the stripped liquid catalyst is then passed to the alkylation reaction. The s[illegible]rated stream of hydrocarbons



and alkyl fluorides may be supplied to the reaction mixture undergoing phase separation to recover valuable hydrocarbons from said overhead stream as a portion of the alkylate product.

3,729,527

THERMOPLASTIC POLYMER BLENDS OF POLYAMIDES AND POLYARYLSULFONES

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 28, 1971, Ser. No. 138,286

Int. Cl. C08g *41/04*

U.S. Cl. 260—857 R 5 Claims

Thermoplastic polymer blends which contain from 99% to 1% of one or more aromatic polysulphones and from 1% to 99% of one or more thermoplastic polyamides having a desirable combination of physical properties and in particular better flow properties in the melt than the polysulphones themselves.

3,729,528

PROCESS FOR THE PREPARATION OF POLYESTER RESINS WITH LOW SHRINKAGE FROM POLYESTER RESINOUS COMPOSITIONS CONTAINING A REACTIVE FILLER

Gerhard Werner, Hofheim, Taunus, Dieter Stahl, Kriftel, Taunus, and Guido Max Rudolf Lorentz, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 21, 1971, Ser. No. 136,216

Claims priority, application Germany, Apr. 23, 1970, P 20 19 673.0

Int. Cl. C08f *43/08*

U.S. Cl. 260—862 4 Claims

Unsaturated polyester resins are hardened in the presence of a reactive filler which is a cotelomer of a vinyl aromatic compound, especially styrene, and maleic anhydride. As compared with the resin containing no reactive filler the shrinkage on hardening is reduced. Telomer styrene which was used before as the reactive filler causes an increase in the viscosity of the resins which is considerably higher than the increase caused by the cotelomers herein described.

3,729,529

REACTION PRODUCTS OF AMINE DERIVATIVES OF 1-OLEFIN/MALEIC ANHYDRIDE COPOLYMERS AND METHYL VINYL ETHER-MALEIC ANHYDRIDE COPOLYMERS AS ANTI-STATIC AGENTS

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 885,268, Dec. 15, 1969, which is a continuation-in-part of application Ser. No. 797,701, Feb. 7, 1969, both now abandoned, and a division of application Ser. No. 4,024, Jan. 19, 1970, now Patent No. 3,677,724. This application July 8, 1971, Ser. No. 160,942

Int. Cl. C08f *37/18*

U.S. Cl. 260—897 B 6 Claims

Liquid hydrocarbon compositions are provided containing, in an amount sufficient to impart anti-static properties, the reaction product of an amine derivative of an olefin/maleic anhydride copolymer and an alkyl vinyl ether-maleic anhydride copolymer.

3,729,530

THERMOPLASTIC COMPOSITIONS COMPRISING POLY-1-OLEFIN AND A POLYMER OF CHLORINATED OXETANE

Leonard L. Curry, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application June 1, 1970, Ser. No. 42,507. Divided and this application Nov. 24, 1971, Ser. No. 201,961

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 C 3 Claims

Compositions of normally solid poly-1-alkene such as polypropylene and from about 1 to about 20 percent by weight based on the total composition of crystalline chlorinated linear polypentyl ether are embossable to provide thermoplastic articles characterized by raised portions having contrasting color.

3,729,531

VACUOLE-FREE FILAMENTS AND FILMS OF ACRYLONITRILE COPOLYMERS

Carlhans Suling, Odenthal-Hahnenberg, and Heino Logemann, Leverkusen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 19, 1971, Ser. No. 126,347

Claims priority, application Germany, Mar. 26, 1970, P 20 14 763.1

Int. Cl. C08f *29/56*

U.S. Cl. 260—898 13 Claims

Vacuole free filaments and films of copolymers of acrylonitrile and vinylidene chloride, which contain 0.1 to 4% of a homopolymer of dimethylacrylamide or of a copolymer of acrylonitrile with dimethyl acrylamide.

3,729,532

BISPHENOL PHOSPHORUS ESTERS

Eric Jungermann, Chicago, and Henry E. Reich, Wilmette, both of Ill., assignors to Armour-Dial, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 579,195, Sept. 15, 1966, abandoned. This application June 12, 1969, Ser. No. 832,813

Int. Cl. C07d *103/04*; C07f *9/30*

U.S. Cl. 260—936 1 Claim

Phosphorus-containing esters of various bis-phenols having germicidal activity.

The foregoing esters in combination with certain halogen-substituted carbanilide and anilides display synergistic germicidal activity.

3,729,533

PROCESS FOR PRODUCING TRIBUTYL PHOSPHATE HAVING LOW SODIUM ION CONTENT

Wallace F. Runge, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,384
Int. Cl. C07f 9/16
U.S. Cl. 260—990 4 Claims

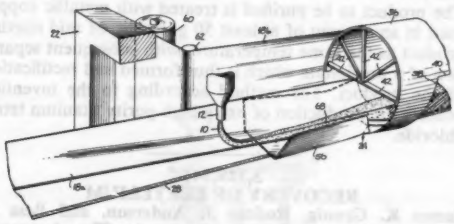
A process for the production of tributyl phosphate (TBP) characterized by exceptionally low concentration of sodium ion comprising the steps of extracting the TBP twice with aqueous ammonium sulfate solution.

3,729,534

METHOD FOR CONTINUOUSLY FORMING ELONGATED CYLINDERS OF POLYURETHANE FOAM

Charles Ferstenberg, Paramus, N.J., assignor to Tenneco Chemicals, Inc., New York, N.Y.

Continuation of application Ser. No. 696,070, Jan. 5, 1968. This application June 1, 1970, Ser. No. 41,739
Int. Cl. B29d 27/04
U.S. Cl. 264—54 4 Claims



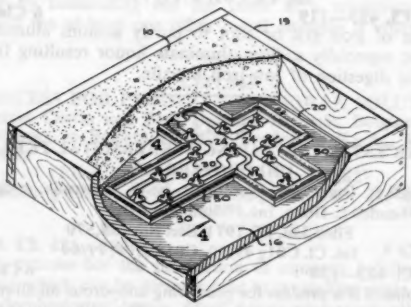
Contouring of flexible webs to the interior of an elongated moving molding channel by the provision of specially located and specially shaped guiding devices, by the provision of special internal mold supports and by the selective overlapping of separate web sheets.

3,729,535

METHOD AND APPARATUS FOR CREATING HAND-CHISELED EFFECT

James L. Regan, 409 Dunkel St., Fairbanks, Alaska 99701

Filed Jan. 11, 1972, Ser. No. 217,000
Int. Cl. B44b 1/22
U.S. Cl. 264—84 14 Claims



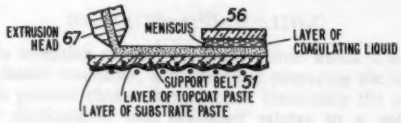
A method and apparatus is disclosed for decorating concrete including a mould form having a flat base surface to which a paper pattern is attached with the pattern including a printed outline of a desired design and electrical conductors imprinted on the paper within the lines of the design for enabling attachment of individual explosive buttons to required portions of the pattern prior to the filling of the form with fresh concrete. Each explosive member comprises an individual button extending inwardly from the base surface of the form and which buttons are embedded in the concrete upon the hardening of the concrete; all the explosive buttons are simultaneously detonated after removal or loosening of the form to create a chiseled effect in the face of the form. Another aspect of the invention resides in strip members attached to the pattern to provide a groove in the concrete to define an outline of the design with the explosive means being positioned inwardly of the groove so that the effect of detonation of the explosive members is confined to the area inside the groove members.

3,729,536

METHOD OF PRODUCING WATER VAPOR PERMEABLE SHEET MATERIAL

Eric Albert Warwicker, King's Lynn, England, assignor to Porvair Limited, Norfolk, England

Filed June 2, 1970, Ser. No. 42,793
Int. Cl. B29d 7/22, 27/04
U.S. Cl. 264—41 16 Claims



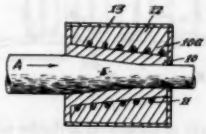
Coagulation process and apparatus for producing thick microporous polyurethane sheet material by passing a sheet of polymer extended with liquid vehicle beneath a close spaced plate with liquid non-solvent fed to the gap between the plate and the surface to produce controlled imitation of the coagulation.

3,729,537

METHOD OF FORMING A FABRIC COVERED CELLULOSE SPONGE STRAND AND THEN COMPRESSING IT IN A PLURALITY OF DIRECTIONS

David Thomas Jones and George Edward Jowett, Swansea, Glamorgan, Wales, and Edward Ernest Webster, Orpington, Kent, England, assignors to Sponcel Limited, Croydon, Surrey, England

Continuation of abandoned application Ser. No. 744,535, July 12, 1968. This application Aug. 26, 1970, Ser. No. 67,241
Claims priority, application Great Britain, July 19, 1967, 33,095/67
Int. Cl. B29d 27/04
U.S. Cl. 264—47 4 Claims



A process for continuous manufacture of shaped vaginal tampons of regenerated cellulose sponge material

comprising extruding cellulose sponge forming material into a tubular fabric casing, regenerating, washing and drying the material, drawing the casing through a heated tapering tubular passageway to compress said strand in a plurality of directions and severing the strand into tampons. The compressed cellulose sponge is capable of resuming its dimensions when moistened.

3,729,538

METHOD FOR PREPARING VAPOUR PERMEABLE FLEXIBLE SHEET MATERIALS

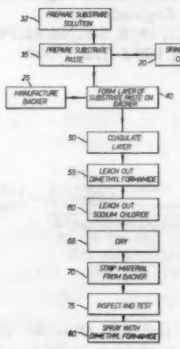
Victor Ralph Cunningham, Dagenham Dock, and David Leonard Boutle, Maldon, England, assignors to Porous Plastics Limited, Essex, England

Continuation of application Ser. No. 697,154, Jan. 11, 1968, now abandoned. This application Oct. 2, 1970, Ser. No. 90,192

Claims priority, application Great Britain, Jan. 11, 1967, 1,608/67

Int. Cl. B29d *27/04*; C08g *53/08*

U.S. Cl. 264—49 16 Claims



For a method of making water vapour permeable flexible sheet materials which find uses as replacements for leather in which the material is formed from a layer of a mixture of powdered removable filler dispersed through a polymer solution which adheres to a temporary backer and is coagulated and the filler leached out by suitable liquid treatment the advantages of certain ratios of polymer to solvent and certain relatively high ratios below 3:1 of filler to polymer in the mixture are set out.

3,729,539

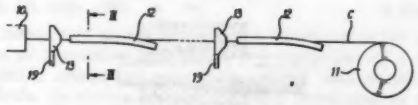
COOLING OF PLASTIC EXTRUSIONS OF SMALL CROSS-SECTIONAL AREA

Alan Harvey Hill, Darlington, England, assignor to General Engineering Company (Radcliffe) Limited and British Insulated Callender's Cables Limited, London, England

Filed June 30, 1970, Ser. No. 51,309

Int. Cl. B29c *25/00*; B29f *3/10*

U.S. Cl. 264—89 6 Claims



A method of cooling a plastic extrusion of small cross sectional area, which method includes the steps of drawing the extrusion along a predetermined path and directing water onto it at least at one position along the path so as not to disturb the lateral stability of the extrusion. The water impinging on the extrusion has a substantial component of velocity in the direction in which the extrusion is being drawn.

3,729,540

PURIFICATION OF TITANIUM TETRACHLORIDE FROM CONCOMITANT IMPURITIES

Vitaly Grigorievich Brudz, Abelmanovskaya ulitsa 7, kv. 94; Nikolai Nikolaevich Pronyakin, Pervomaiskaya ulitsa 74, kv. 64; Grigory Zakharovich Bijum, ulitsa Kominterna 32/5, kv. 23; Sarrya Isaakovna Khainson, Graivoronovskaya ulitsa 10, korpus 1, kv. 28; Gennady Georgievich Vinogradov, ulitsa Izmailovsky bulvar 58/13, kv. 16; and Muza Konstantinova Tuganova, ulitsa Boitsovaya 21, korpus 1, kv. 112, all of Moscow, U.S.S.R.; and Julia Vladimirovna Vasilieva, ulitsa Komsomolskaya 5, kv. 49, Reutov, U.S.S.R.

No Drawing. Filed July 28, 1971, Ser. No. 166,987

Int. Cl. C01g *23/02*; B01d *3/34*

U.S. Cl. 423—76 1 Claim

A method for the purification of technical titanium tetrachloride from concomitant impurities, which includes introducing dichloramide of benzene sulphonic acid into the starting technical product in an amount not exceeding 0.5 g. per lit. of said starting product at a temperature of from 40° C. to a B.P. of said starting technical product. The product to be purified is treated with metallic copper used in an amount of at least 50 g. per lit. of said starting product at the same temperature, with subsequent separation of a precipitate which is thus formed and rectification of the product. The method according to the invention enables the production of extra-high-purity titanium tetrachloride.

3,729,541

RECOVERY OF BERYLLIUM

James K. Grunig, Rodney J. Anderson, and Bess L. Vance, Tucson, Ariz., assignors to The Anaconda Company

Filed Nov. 30, 1971, Ser. No. 203,363

Int. Cl. C01f *3/00*

U.S. Cl. 423—112 4 Claims

Beryllium is extracted from an impure acid aqueous solution of beryllium sulfate by means of an organic solution containing a bis (alkyl substituted) phenyl acid phosphate, and then stripping the beryllium and regenerating the organic extractant by treatment of the organic solution with a mineral acid.

3,729,542

PURIFICATION OF SODIUM ALUMINATE LIQUOR

Richard H. Goheen, O'Fallon, Ill., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation of abandoned application Ser. No. 824,156, May 13, 1969. This application Aug. 27, 1971, Ser. No. 175,708

Int. Cl. C01f *7/02*, *7/06*

U.S. Cl. 423—119 6 Claims

Use of iron grit or shot to purify sodium aluminate liquor, especially sodium aluminate liquor resulting from caustic digestion of low-iron bauxite.

3,729,543

PROCESS FOR PREPARING ALKALI-METAL TETRACHLOROFERRATE

Wendell E. Dunn, Jr., Woollahra, NSW, Australia, assignor to Wendell E. Dunn, Inc., Wilmington, Del.

Filed Jan. 21, 1971, Ser. No. 108,570

Int. Cl. C01g *49/10*; C01d *3/04*, *11/04*

U.S. Cl. 423—138 6 Claims

Claimed is a process for producing anhydrous alkali-metal tetrachloroferrates by heating with distillation a mixture of an alkali-metal chloride and a hydrous ferric chloride or an aqueous mixture of an alkali-metal chloride and ferric chloride.

The alkali-metal tetrachloroferrates are useful as intermediates for producing chlorine.

3,729,544

SEPARATION OF IRON BY CHLORINATION OF A FERRO-ALLOY

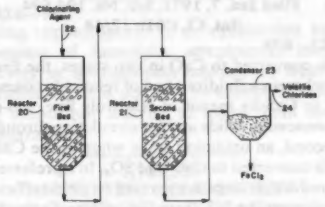
Elis Kjell Ake Svanstrom, Nynashamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden

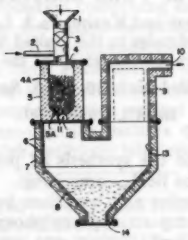
Continuation of abandoned application Ser. No. 47,366, June 18, 1970. This application Mar. 24, 1972, Ser. No. 237,688

Claims priority, application Sweden, July 17, 1969, 10,115/69

Int. Cl. C01g *41/00, 49/00*

U.S. Cl. 423—149 7 Claims





Iron is separated by halogenation from a material, e.g. an alloy, containing at least one other metal selected from the group consisting of Zr, Ti, Hf, V, Nb, Ta, Mo, W, and Re wherein the material is chlorinated to form a gaseous mixture containing ferrous chloride and at least one other metal chloride, following which the one other metal chloride is separated from the ferrous chloride by condensing out the latter at a temperature at which the at least one other metal chloride is volatile.

3,729,545

PROCESS FOR PRODUCING A BORAX SOLUTION

Marcel Castin and Paul Demilie, Brussels, Belgium, assignors to Societa Chimica Larderello S.p.A., Milan, Italy

Filed Apr. 14, 1971, Ser. No. 133,827

Claims priority, application Belgium, Apr. 21, 1970, 88,039

Int. Cl. C01b *15/12, 35/00*

U.S. Cl. 423—280 3 Claims

A process for the production of aqueous solutions of borax which can be directly used to crystallize penta-and/or decahydrated borax. Used are a source of alkaline Na_2O in the form of hydroxide, carbonate and/or bicarbonate of sodium, and clear aqueous solutions of ammonium borate which are produced by treating boron and calcium minerals with ammonia and carbon dioxide. These solutions are introduced in a distillation column where the ammonium borates are decomposed under heat to produce a solution which is practically free of ammonia. For this purpose, there are successively introduced in this column:

the clear aqueous solution of ammonium borates

at least 50% of the quantity of alkaline Na_2O which is stoichiometrically required to convert the ammonium borates into borax. The remaining portion of alkaline Na_2O which is stoichiometrically required is thereafter introduced in the form of sodium hydroxide into the solution which has been collected at the bottom of the column. In this manner there is obtained an aqueous solution of borax which can directly be used to crystallize penta-and/or decahydrated borax by any known means. By stoichiometric quantity of alkaline Na_2O is meant 1 mole of Na_2O per 2 moles of B_2O_3, i.e. the composition of borax: $Na_2O \cdot 2B_2O_3$ or $Na_2B_4O_7$.

3,729,546

CHEESE EMULSIFYING AGENT

Russell N. Bell, Ardsley, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed May 6, 1970, Ser. No. 35,271

Int. Cl. C01b *25/26, 15/16*

U.S. Cl. 423—306 4 Claims

The invention provides a composition which is useful as a cheese emulsifying agent, and the process for making the same. The composition has the empirical formula:

$$Na_4Al_3(OH)_4(PO_4)_3 \cdot \pm 12H_2O$$

This invention relates to a composition which is useful as a cheese emulsifier, a process for preparing the same, and to process cheese formulations containing the same. More particularly, this invention relates to a sodium aluminum phosphate composition of relatively high sodium content.

3,729,547

PROCESS AND PLANT FOR AMMONIA SYNTHESIS

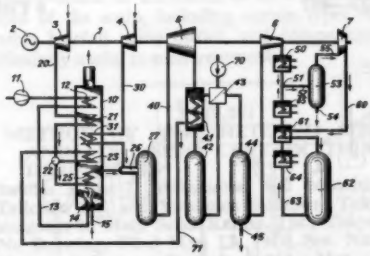
Ludwig Silberring, Zurich, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

Filed Dec. 14, 1970, Ser. No. 97,870

Claims priority, application Switzerland, Dec. 24, 1969, 19198/69

Int. Cl. C01c *1/04*

U.S. Cl. 423—359 3 Claims



The reformed gas which is produced at 900° C and about 40 atmospheres absolute pressure is cooled to 600° C at a high rate through a working expansion such as in an expansion chamber. This is followed by a heat exchange cooling to obtain medium pressure steam for use in the synthesis process.

3,729,548

PROCESS FOR SAFELY REACTING ACTIVE METALS

Charles H. Lemke, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 601,855, Dec. 15, 1966. This application July 31, 1969, Ser. No. 846,590

Int. Cl. C01b *1/02*; C01c *3/08*; C01g *1/00*

U.S. Cl. 423—371 7 Claims

A safe controllable, convenient process for completely reacting an active metal with a reactive liquid comprising contacting said metal with a dispersion which consists essentially of a reactive liquid phase (e.g., water) dispersed in a continuous nonreactive liquid phase (e.g., inert hydrocarbon oil).

3,729,549

PROCESS FOR THE FORMATION OF STABILIZED AND CARBONIZED ACRYLIC FIBROUS MATERIAL

Klaus H. Gump, Gillette, and Dagobert E. Stuetz, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Original application Nov. 21, 1968, Ser. No. 777,902. Divided and this application July 7, 1971, Ser. No. 160,567

Int. Cl. C01b *31/07*

U.S. Cl. 423—447 23 Claims

An improved process is provided for the formation of fibrous materials of enhanced thermal stability derived from acrylic polymers consisting primarily of recurring acrylonitrile units. A minor quantity of a Lewis acid capable of promoting the cyclization of pendant nitrile groups is incorporated in a solution of the acrylic polymer, a cyclized acrylic material is formed within the solution at an elevated temperature, the resulting solution is spun to form a cyclized acrylic fibrous material which is soluble in N,N-dimethylformamide, and the resulting cyclized acrylic fibrous material is heated in an oxygen-containing atmosphere until a stabilized fibrous product is formed which is capable of undergoing carbonization and which is insoluble in N,N-dimethylformamide. The stabilized fibrous material may next optionally be carbonized or carbonized and graphitized at elevated temperatures while present in an inert atmosphere.

3,729,550

PROCESS FOR THE PURIFICATION OF AQUEOUS MAGNESIUM CHLORIDE SOLUTIONS

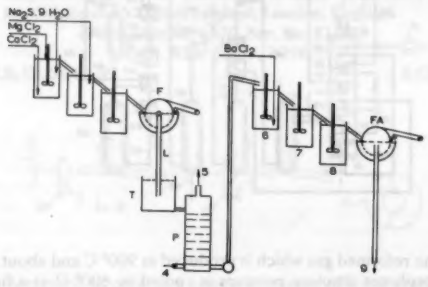
Oystein Boyum, Skien, Finn Enok Folkestad, Heistad, and Asbjorn Torvund, Porsgrunn, Norway, assignors to Norsk Hydro A.S., Oslo, Norway

Filed Apr. 12, 1971, Ser. No. 133,151

Claims priority, application Norway, Apr. 16, 1970, 1,447/70

Int. Cl. C01f *5/30*

U.S. Cl. 423—497 6 Claims



A process is provided for the purification of magnesium chloride solutions which are to be converted to low-moisture or anhydrous magnesium chloride for molten salt electrolysis. The process comprises three steps, and calcium ions and sulphide ions are added in the first step, the solution is treated with an oxidizing agent in the second step, and barium ions are added to the solution in the third step.

3,729,551

CONVERSION OF CALCIUM SULFATE TO CALCIUM OXIDE AND ELEMENTAL SULFUR

Everett Gorin, Pittsburgh, Pa., assignor to Consolidated Coal Company, Pittsburgh, Pa.

Filed Jan. 7, 1971, Ser. No. 104,694

Int. Cl. C01b *17/44*

U.S. Cl. 423—638 1 Claim

$CaSO_4$ is converted to CaO in two stages, the first a reduction stage wherein a fluidized bed of relatively coarse $CaSO_4$ is converted to CaS by means of relatively fine, ash-containing hydrocarbonaceous solids and air circulating through the bed, and the second, an oxidation stage wherein the CaS from the first stage is converted to CaO and SO_2. In a preferred embodiment, the reduction stage is operated to yield sufficient reducing gas to convert the SO_2 from the oxidation stage to elemental sulfur.

3,729,552

PREPARATION OF PURE BERYLLIUM HYDRIDE

Reinhold H. Kratzer and Kazimiera J. L. Paciorek, Costa Mesa, Calif., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Nov. 30, 1965, Ser. No. 511,024

Int. Cl. C01f *3/00*

U.S. Cl. 423—645 2 Claims

1. A method for the synthesis of pure beryllium hydride of composition BeH_2, comprising:

(a) adding 1 molar part beryllium borohydride etherate to 2 molar parts triphenylphosphine in a vessel,

(b) evacuating and closing said vessel and heating same at 64–67° C. until 1 molar part of diethylether is given off in the reaction,

(c) opening said vessel to a high vacuum system and separating the volatile byproducts from the solid residue,

(d) extracting triphenylphosphino-borine from said residue with refluxing benzene leaving pure beryllium hydride as the insoluble product.

3,729,553

PACKAGED EFFERVESCENT COMPOSITION

David Gold, Yonkers, Bernard Misek, Pomona, and Norman Braun, Dover Plains, N.Y., assignors to Richardson-Merrell, Inc., New York, N.Y.

Continuation of application Ser. No. 31,136, Apr. 23, 1970. This application Mar. 17, 1972, Ser. No. 235,594

Int. Cl. A61k *7/16*

U.S. Cl. 424—44 13 Claims

A packaged effervescent composition comprising a package having two compartments for storage of ingredients of said effervescent composition from which the ingredients are adapted to be dispensed simultaneously and proportionately for reaction with each other, the first compartment containing a solution of an effervescing producing reactant and the second compartment containing a complementary solution of an effervescing releasing reactant suitable for releasing the effervescence of the first compartment upon reaction with the effervescing producing reactant.

3,729,554

METHOD OF TREATING HEMOLYTIC STREPTOCOCCI AND THE RESULTANT PREPARATION CONTAINING THE SAME

Shigeo Suzuki, Takao Noto, and Yoshio Takagaki, Tokyo, Sakae Wada, Ageo, and Akihiro Yamamoto, Haruki Ogawa, Takashi Matsuno, Hiroshi Okazaki, and Yutaka Sugawara, Tokyo, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 694,854, Jan. 2, 1968. This application Mar. 15, 1971, Ser. No. 124,445

Claims priority, application Japan, Jan. 20, 1967, 42/3,651; Sept. 18, 1967, 42/59,387

Int. Cl. C12k *3/00*

U.S. Cl. 424—93 9 Claims

By adding cephalosporin C or cycloserine to a living cell suspension of hemolytic streptococci having anti-tumor activity in a suspension medium to treat the cells with the antibiotic, it is possible to eliminate toxicity with increasing anti-tumor activity to make them useful anti-tumor preparations.

3,729,555

ANTIBIOTIC COMPOSITION

Boris Gradnik, Milan, Italy, assignor to MIDY, Paris, France

No Drawing. Filed Oct. 22, 1971, Ser. No. 191,792

Claims priority, application France, Oct. 28, 1970, 7038890

Int. Cl. A61k *21/00*

U.S. Cl. 424—114 7 Claims

Antibiotic composition comprising as active ingredients from 30 to 45% by weight of penicillin G and from 70 to 55% by weight of metampicillin. This composition is active against both gram-positive and gram-negative bacteria, including the penicillinase producing Staphylococci; has a synergistic action against gram-positive and a number of gram-negative bacteria and is able to give extraordinarily high antibiotic bile levels.

3,729,556

PROPHYLACTIC PREPARATION FOR PREVENTING SENSITIZATION OF Rh-NEGATIVE MOTHERS BY Rh-POSITIVE FETAL ERYTHROCYTES

Otto Schwarz, 5 Celtesgasse, and Hans Eibl, 2 Gustav Tschermak-Gasse, both of Vienna, Austria

No Drawing. Filed Nov. 14, 1969, Ser. No. 876,994

Claims priority, application Austria, Apr. 29, 1969, A 4,134/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 4 Claims

The invention relates to a method for the production of a prophylactic preparation to prevent sensitization of Rh-negative mothers by Rh-positive fetal erythrocytes, in which a $Rh_0(D)$-immune globulin solution is mixed with a human albumin solution at a volume ratio of $Rh_0(D)$-immune globulin: albumin of between 1:2 and 1:10. The resulting preparation may be stored for a considerably prolonged period and may itself be utilized for an initial compatibility test by the agglutination method.

3,729,557

INSECTICIDAL COMPOSITIONS AND METHODS OF COMBATTING INSECTS USING PHOSPHORYLATED 1,2,5-THIADIAZOLES

Michael D. Barker, Maidstone, England, and Peter Kirby, Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Original application Apr. 12, 1968, Ser. No. 721,088, now Patent No. 3,666,768, dated May 30, 1972. Divided and this application Jan. 20, 1972, Ser. No. 219,561

Claims priority, application Great Britain, Apr. 14, 1967, 17,199/67

Int. Cl. A01n *9/36*

U.S. Cl. 424—200 18 Claims

Insecticidal compositions and methods of killing insects using phosphorylated 1,2,5-thiadiazoles.

3,729,558

USE OF CERTAIN METHYLPHOSPHONATE DIESTER COMPOUNDS AS INSECTICIDES

George M. Steinberg, Baltimore, and Claire N. Lieske, Joppa, Md., and Arthur B. Ash, Detroit, and Peter Blumbergs, Oak Park, Mich., assignors to Ash Stevens, Inc., Detroit, Mich.

No Drawing. Filed Feb. 16, 1970, Ser. No. 11,876

Int. Cl. A01n *9/36*

U.S. Cl. 424—214 3 Claims

Methylphosphonate diesters useful as insecticides are described. The ester groups include phenacyl and phenyl groups which are unsubstituted and substituted in the phenyl ring. The insecticidal activity of the compounds is destroyed by hydrolysis wherein the phenacyl group, either in keto or oxime form, activates the displacement of the phenyl group in the presence of water to produce the corresponding inactive hydrolysis products, phenacyl methylphosphonic acids and phenols. Insecticidal compositions incorporating the methylphosphonate diesters as the active ingredient are also described.

3,729,559

1,2-OXAZINE DERIVATIVES IN ALLEVIATING PAIN AND TREATING INFLAMMATORY DISEASES

Rolf Denss, Basel, Switzerland, Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Apr. 22, 1969, Ser. No. 818,407, now Patent No. 3,586,676, dated June 22, 1971. Divided and this application Jan. 8, 1971, Ser. No. 105,085

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 3 Claims

The compounds are of the class of [p-(3,6-dihydro-2H-1,2-oxazin - 2 - yl) - phenyl] - alkanoic acids, the methyl and ethyl esters thereof, as well as the pharmaceutically acceptable salts thereof and have analgesic and anti-inflammatory activity; the compounds are active ingredients of pharmaceutical compositions and are useful for alleviating pain and treating inflammatory diseases in mammals; an illustrative embodiment is [p-(3,6-dihydro-2H-1,2-oxazin-2-yl)-phenyl]-acetic acid.

3,729,560

TREATMENT OF HAIR AND SCALP WITH COMPOSITIONS CONTAINING ESTRIOL

Gosta Hagerman, Lund, Sweden, assignor to Aktiebolaget Leo (A/B Leo), Halsingborg, Sweden

No Drawing. Filed Mar. 25, 1969, Ser. No. 810,351

Claims priority, application Great Britain, Apr. 2, 1968, 15,852/68

Int. Cl. A61k *11/06*

U.S. Cl. 424—238 9 Claims

Improvement or alleviation of certain undesirable conditions of the scalp, including certain types of non-irreversible hairfall using estriol, and compositions thereof particularly useful in such treatment.

3,729,561

METHOD OF ANESTHETIZING AQUATIC ANIMALS USING CERTAIN THIAZOLE DERIVATIVES

Takahiko Kikuchi, Yokohama, and Motohiro Nishio, Teiichiro Ito, and Yasuharu Sekizawa, Tokyo, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

No Drawing. Filed Mar. 13, 1970, Ser. No. 19,459

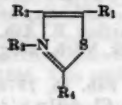
Claims priority, application Japan, Mar. 20, 1969, 44/20,839, 44/20,840; May 14, 1969, 44/36,591; Dec. 9, 1969, 44/98,350, 44/98,351

Int. Cl. A01n *9/12*

U.S. Cl. 424—270 16 Claims

Various aquatic animals such as fishes, shells etc., may be anesthetized to different degrees by treating water or marine water containing about 1 to 100 p.p.m. of known

substituted 2-amino- or 2-methyl-thiazole derivatives of the general formula



wherein R_1 is a hydrogen, methyl, ethyl, phenylmercapto or p-chlorophenylmercapto group; R_2 is methyl, ethyl, phenyl, p-methylphenyl, p-methoxyphenyl, p-chlorophenyl or p-bromophenyl group; or R_1 and R_2 taken together with the adjacent two carbon atoms of the thiazole nucleus form a tetrahydrobenzene ring, dihydronaphthalene ring or 4H-benzothiopyran ring fused to the thiazole nucleus when R_4 represents an amino group $—NH_2$; either R_3 is absent, or R_3 is a methyl group when R_4 represents a methylimino group $=NCH_3$ provided that the double bond adjacent to the nitrogen atom of the thiazole nucleus is then a single bond; and R_4 is a methyl, amino, hydrazino or methylimino group, as well as acid-addition salts thereof. Aquatic animals so anesthetized may have an improved resistance to long time transport thereof.

3,729,562

COMBATING ARTHROPODS WITH N-ACYL-1,2-DICARBONYL-PHENYL-HYDRAZONES

Karl Heinz Buchel and Wilfried Draber, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, and Gunter Unterstenhofer, Opladen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application July 2, 1969, Ser. No. 838,632, now Patent No. 3,631,091, dated Dec. 28, 1971. Divided and this application Aug. 5, 1971, Ser. No. 169,497

Claims priority, application Germany, July 5, 1968, P 17 68 834.5

Int. Cl. A01n *9/20*

U.S. Cl. 424—304 **12 Claims**

Combating arthropods with N-acyl - 1,2 - dicarbonyl-phenyl-hydrazones, i.e. (α-cyano-α-alkanoyl and carbo-alkoxy)-carbonyl -N-(alkanoyl, chloroalkanoyl, alkenoyl and benzoyl)- [(mono, and same and mixed di and tri, -chloro and -trifluoromethyl)-phenyl]-hydrazones.

3,729,563

METHOD OF TREATING MOVEMENT DISORDERS

William D. Cash, Riverside, Conn., and Barbara Petrack, Briarcliff Manor, and Murray Weiner, White Plains, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 5,940, Jan. 26, 1970. This application Dec. 8, 1970, Ser. No. 96,295

Int. Cl. A61k *27/00*

U.S. Cl. 424—248 **3 Claims**

Gallic acid, its salts and its alkyl esters are utilized in the treatment of involuntary movement disorders. The compounds can be administered alone or in combination, as with L-DOPA in the treatment of parkinsonism.

3,729,564

N-SECONDARY ALKYL ALKANEDIAMINES AND DERIVATIVES THEREOF AS ANTI-INFLAMMATORY AGENTS

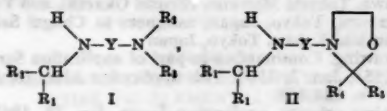
Yi Han Chang, Waterford, George R. Evanega, Ledyard, and William M. McLamore, Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,860

Int. Cl. A61k *27/00*

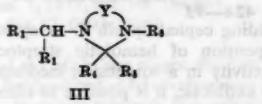
U.S. Cl. 424—325 **3 Claims**

A series of N-secondary alkyl alkanediamines, and prodrug forms thereof; namely, 3-[(ω-secondary alkylamino) alkyl]oxazolidines; 1,3-dialkyl-1,3-diazacycloalkanes; and the non-toxic acid addition salts thereof having the formulae below are useful as anti-inflammatory and immunosuppressive agents:



I II

and



III

wherein

Y is alkylene of from 2 to 5 carbon atoms;

R_1 is alkyl of from 4 to 13 carbon atoms;

R_2 is hydrogen, 2-hydroxyethyl or ethyl;

R_3 is 2-hydroxyethyl or R_6 wherein R_6 is alkyl of from 1 to 20 carbon atoms;

R_4 is hydrogen, alkyl of from 1 to 20 carbon atoms; cycloalkyl of from 3 to 7 carbon atoms; phenyl or substituted phenyl wherein the substituent is halogen, lower alkyl, lower alkoxy, cyano or trifluoromethyl;

R_5 is R_4, thienyl, pyridyl or furyl; and

R_4 and R_5 when taken together with the carbon atom to which they are attached are cycloalkyl of from 3 to 7 carbon atoms.

3,729,565

APHICIDAL AND ACARICIDAL COMPOSITIONS CONTAINING N-2,4 DIMETHYLPHENYL-N'-METHYLFORMAMIDINE OR ITS ACID ADDITION SALTS AND METHODS OF USE

Ian Robert Harrison, Bleasby, John Felix McCarthy, Bramcote Hills, and Bryan Harper Palmer, Burton Joyce, England, assignors to Boots Pure Drug Company Limited, Nottingham, England

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,208

Claims priority, application Great Britain, Dec. 12, 1969, 60,793/69; May 14, 1970, 23,500/70

Int. Cl. A01n *9/20*

U.S. Cl. 424—326 **6 Claims**

A new N - arylformamidine, namely N-2,4 - dimethylphenyl-N'-methylformamidine, and acid addition salts thereof are described. The compounds possess acaricidal and aphicial properties and pesticidal methods and compositions using them are described. N-2,4-dimethylphenyl-N'-methplformamidine is also of value as an intermediate in the preparation of the pesticidal compound 1,5-di-(2,4-dimethylphenyl)-3-methyl-1,3,5-triazepenta - 1,4-diene described in our copending application Ser. No. 94,209, filed Dec. 1, 1970.

3,729,566

RODENT STERILANT PROCESS

Ronald J. Ericsson, Oshtemo, and Daniel Lednicer and Gilbert A. Youngdale, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 764,927, Oct. 3, 1968, which is a continuation-in-part of application Ser. No. 683,613, Nov. 13, 1967, both now abandoned. This application May 25, 1971, Ser. No. 146,807

Int. Cl. A01n *9/24*; A61k *27/00*

U.S. Cl. 424—342 **5 Claims**

Pharmaceutical preparations in dosage forms consisting essentially of compatible pharmaceutically acceptable

carriers, oral and injectable, compounded with an effective amount for preventing impregnation by sexually mature male rats of a compound of the formula

$$YR_1OCH_2CH(OR)CH_2Cl,$$

wherein Y is OH or $ClCH_2CH(OR)CH_2O$—; R_1 is chosen from the group consisting of an alkylene radical of 2 to 16 carbon atoms, inclusive; an alkenylene radical of 4 to 16 carbon atoms, inclusive; and an alkynylene radical of 4 to 16 carbon atoms, inclusive; and R is hydrogen or an acyl radical of a hydrocarbon carboxylic acid of 1 to 18 carbon atoms, inclusive. Preferred compounds are those of the given formula wherein R is hydrogen. Methods of preventing impregnation by sexually mature male rats which comprise administering systemically to the rats an effective amount for preventing impregnation of a compound as described, suitably compounded into a dosage form of a pharmaceutical preparation.

3,729,567

1,1,5-TRIHYDRO-PERFLUOROPENTANE AS AN INHALATION ANESTHETIC

Ross C. Terrell, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

No Drawing. Filed July 15, 1971, Ser. No. 163,102

Int. Cl. A61k *27/00*

U.S. Cl. 424—350 **2 Claims**

The novel compound 1,1,5 - trihydro-perfluoropentane having the formula $CHF_2(CF_2)_3CH_2F$ is disclosed. This compound is useful as an inhalation anesthetic and as a solvent and dispersant for fluorinated materials.

3,729,568

ACNE TREATMENT

Albert M. Kligman, Philadelphia, Pa., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of application Ser. No. 678,493, Oct. 25, 1967. This application Sept. 23, 1969, Ser. No. 860,296

Int. Cl. A61k *15/02*

U.S. Cl. 424—318 **10 Claims**

The dermatologic disorder called acne vulgaris is controlled by topical application of vitamin A acid to the affected area. The application is made daily with a composition of low vitamin A acid content in the order of about 0.1%, by weight, until the acne is relieved. Particularly suitable compositions for topical applications are also provided.

3,729,569

COSMETIC COMPOSITION CONTAINING MICROENCAPSULATED SOLVENTS FOR NAIL ENAMEL

Roger Charle, Soisy-sous-Montmorency; Charles Zviak, Franconville, and Gregoire Kalopissis, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Division of Ser. No. 8,720, Feb. 4, 1970, Pat. No. 3,686,701. This application June 21, 1972, Ser. No. 264,871

Claims priority, application Luxembourg, Feb. 4, 1969, 57904

Int. Cl. A61k *7/04*

U.S. Cl. 424—14 **3 Claims**

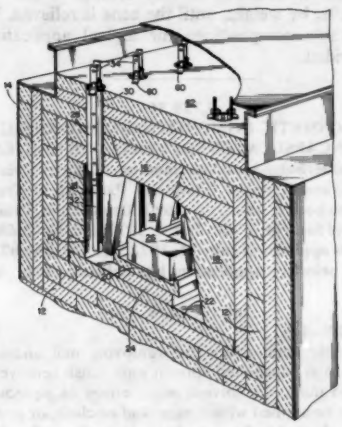
A cosmetic composition for removing nail enamel comprises micro-encapsulated solvent nail polish remover with a perfume to mask the solvent odor, either as aqueous drops adapted to be applied with cotton wad or cloth, or as an aqueous paste adapted to be stored in a jar or in a aflexible tube, and to be applied with a spatula.

ELECTRICAL

3,729,570
MODULAR HEATER FURNACE

Jacob Howard Beck, Waban, Mass., assignor to BTU Engineering Corporation, North Billerica, Mass.

Filed Sept. 20, 1971, Ser. No. 181,932
Int. Cl. F27b *9/36*; H05b *3/06*
U.S. Cl. 13—25 9 Claims

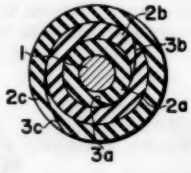


A heat treating furnace having distinct easily replaceable modular heating elements disposed in an effectively continuous array along the furnace for efficient high temperature operation. Each heating element is in the form of a sinuous ribbon of high temperature metal and is supported within the furnace in a manner to permit easy removability without furnace disassembly.

3,729,571
INSULATION FOR POWER CABLE JOINTS AND A METHOD OF MAKING SAME

Kenji Matsuura, Ikeda, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Division of Ser. No. 815,432, April 11, 1969, Pat. No. 3,596,572. This application May 14, 1970, Ser. No. 48,731
Claims priority, application Japan, April 12, 1968, 43/24027; Aug. 27, 1968, 43/73355
Int. Cl. H01b *7/02*
U.S. Cl. 174—25 R 3 Claims

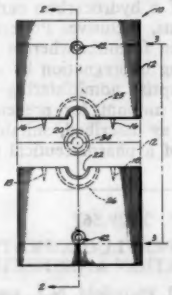


An insulation for power cable joints wherein a previously shaped split-type paper cylinder is placed over the cable core such that the outside edge thereof forms a snail-like borderline.

3,729,572
SPLIT OUTLET PLATE

Charles J. Helin, 1488 San Pasqual St., Pasadena, Calif.

Continuation-in-part of Ser. No. 44,183, June 8, 1970, abandoned. This application July 12, 1971, Ser. No. 161,744
Int. Cl. H02g *3/14*
U.S. Cl. 174—66 17 Claims

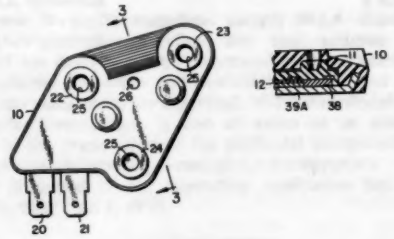


An outlet plate is split into an upper half and a lower half, with a hole through the center of the plate for easily fitting the plate around a cord extending out of an opening in a wall. The plate halves are held together in a common plane by a cooperating tongue and groove arrangement at the interface of the plate halves. The connected plate halves may be secured to the wall, although it is preferred to fasten them to a rigid reinforcing ring shaped to fit around the opening in the wall.

3,729,573
PLASTIC ENCAPSULATION OF SEMICONDUCTOR DEVICES

Thomas A. Dunn, Mesa, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Division of Ser. No. 761,074, Sept. 20, 1968, abandoned. This application Jan. 25, 1971, Ser. No. 109,648
Int. Cl. H05k *5/02*
U.S. Cl. 174—15 R 1 Claim

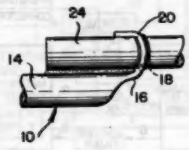


A first plastic encapsulated subassembly has a cup-shaped recess with the sides of the cup having a taper of about 30° and a heat sink opposite the cup. The assembly is placed in a cavity of a mold with a second heat sink in contact with the subassembly heat sink and resting on one face of the mold cavity. A mold pin is inserted into the cup-shaped recess, forcing the subassembly, using a precalculated and controlled deformation of the cup, heat sink and the one mold face together such that the later injected plastic encapsulating material does not flow therebetween to provide a good thermal path from the subassembly heat sink to an outer face of the completed plastic encapsulated assembly.

3,729,574
CONNECTOR AND ELECTRICAL COMPONENT ASSEMBLY

Al Weiner, 2111 Regatta Avenue, Sunset Island No. 4, Miami Beach, Fla.

Continuation-in-part of Ser. No. 825,332, May 16, 1969, Pat. No. 3,566,465. This application March 1, 1971, Ser. No. 122,616
Int. Cl. H01r 5/04, 5/08
U.S. Cl. 174—94 R 2 Claims

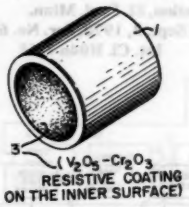


A connector wire has a flattened lead-receiving section with a hole therethrough, and the end of an electrical lead wire is passed through the hole and secured to the flattened section. The free end section of the flattened portion is bent back to reduce the size of the hole and to press its periphery into biting engagement with the lead.

3,729,575
HIGH VOLTAGE INSULATOR HAVING A THICK FILM RESISTIVE COATING

Maynard Caldwell Harding, Menlo Park, and Joseph Armando Payne, Redwood City, both of Calif., assignors to Litton Systems, Inc., San Carlos, Calif.

Filed Oct. 28, 1971, Ser. No. 193,295
Int. Cl. H01j 1/88, 19/42
U.S. Cl. 174—138 R 8 Claims



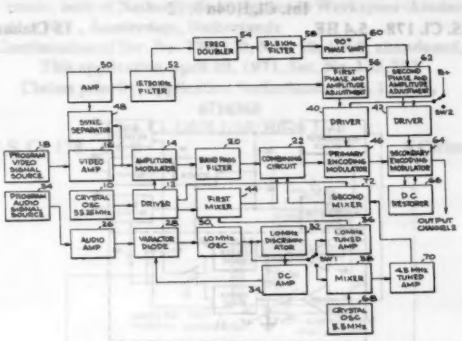
A hollow cylindrical electrical high voltage insulator, suitably an aluminum oxide ceramic material, adapted for use in an electron discharge device includes a fused thick film resistive coating on its inner surface that is on the order of 0.002-inch in thickness and which has a resistivity in the range of 3×10^8 to 10^{13} ohms per square at an ambient temperature of 75°F. In one embodiment the thick film resistive coating is a vanadium-pentoxide chrome-sesquioxide mixture. The coating permits dissipation of surface charges and prevents high energy electrons from penetrating through to the insulator surface.

3,729,576
ENCODING AND DECODING SYSTEM FOR CATV

Patrick R. J. Court, Los Angeles, Calif., assignor to Optical Systems Corporation, Los Angeles, Calif.

Filed Feb. 8, 1971, Ser. No. 113,393
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 16 Claims

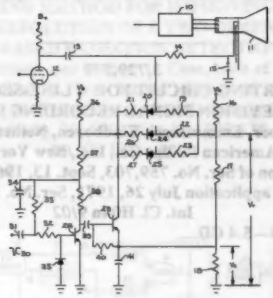
A video signal encoding system is provided by amplitude modulating a video carrier modulated with video, with a sinusoidal waveform whereby the amlitude levels of the sync portion of the video waveform as well as the video portion of the video waveform are altered. Decoding may be achieved by remodulating the encoded video waveform with a decoding sine wave in antiphase with the encoding sine wave and thereafter modulating the result, to eliminate residual error, with a cosine function wave applied in phase opposition to the error component of the resultant, which has twice the frequency of the basic encoding sine wave, but preferably the sequence of the decoding remodulations is reversed.



3,729,577
CLAMP CIRCUIT FOR A COLOR TELEVISION RECEIVER

Donald F. Buell, Baldwinsville, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Jan. 19, 1971, Ser. No. 107,685
Int. Cl. H04n 9/12, 5/18
U.S. Cl. 178—5.4 R 6 Claims

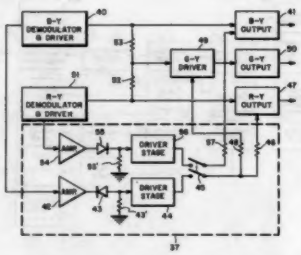


A clamping circuit which provides a first biasing voltage to a color signal transmission path when a video signal is received, and a second, lower biasing voltage when no signal is received. A transistor is periodically gated into conduction by a horizontal synchronizing pulse, charging a capacitor placed in shunt with one portion of a resistive voltage divider. The capacitor discharges through the voltage divider portion, increasing the voltage drop thereacross. The increased voltage drop causes the potential of other portions of the voltage divider to rise proportionately, increasing the biasing voltage applied to the color signal transmission path. When no video signal is received the horizontal synchronizing pulses cease and the transistor is disabled, causing the bias voltage provided by the voltage divider to fall to its quiescent level.

3,729,578
METHOD AND APPARATUS FOR MODIFYING ELECTRICAL SIGNALS

John F. Slusarski, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Aug. 4, 1971, Ser. No. 169,018
Int. Cl. H04n 9/12
U.S. Cl. 178—5.4 HE 15 Claims



A circuit for providing natural looking flesh color in a color television apparatus which uses plural color outputs, such as R–Y, B–Y, and G–Y, to constitute the color signal. In a correction circuit, the R–Y and B–Y signals are processed by clipping and the clipped portions represent phase independent amplitudes of red and yellow respectively. The red amplitude is added to the G–Y output to subtract magenta, and subtracted from the B–Y output to add yellow for a more fleshlike appearance.

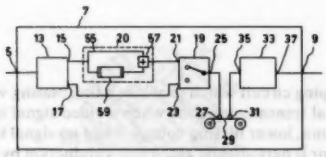
The yellow amplitude is added to the R–Y output to increase the red components making the yellow more fleshlike and subtracted from the green, or adding magenta, to make the yellow more fleshlike.

The above corrections are made to a predetermined color wheel segment without substantially affecting the remaining segment.

3,729,579
CONVERTING CIRCUIT FOR A LINE-SEQUENTIAL TELEVISION SIGNAL RECORDING DEVICE

Jacob De Boer, Emmasingel, Eindhoven, Netherlands, assignor to North American Philips Co., Inc., New York, N.Y.

Continuation of Ser. No. 759,703, Sept. 13, 1968, abandoned.
This application July 26, 1971, Ser. No. 166,273
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 CD 14 Claims

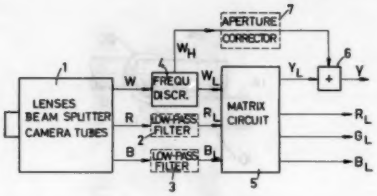


A recording circuit for a simultaneous television signal divides the signal into different frequency bands. At least one of these bands has the vertical definition reduced to eliminate moire patterns upon playback, and then both bands are applied to a switch which converts them into a sequential signal for recording. The reduction in the vertical definition can occur before the frequency division.

3,729,580
TELEVISION CAMERA SYSTEM

Hans-Dieter Schneider, Gross-Gerau, am Bruckelchen, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Continuation of Ser. No. 873,310, Nov. 3, 1969, abandoned.
This application April 18, 1972, Ser. No. 245,108
Int. Cl. H04n 9/04
U.S. Cl. 178—5.4 R 7 Claims

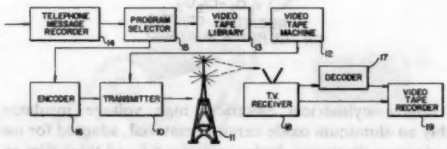


A television system for deriving a luminance signal from a color camera system by matrixing a first signal corresponding to a spectral distribution between the luminosity function of the human eye and the spectral distribution of the primary color green and at least one second signal corresponding to another primary color in a disclosed manner, thereby reducing the effect of color fringing caused by misregistration; preferably a contour signal derived from said first signal is added to the gamma corrected luminance signal.

3,729,581
COMPUTER ASSISTED DIAL ACCESS VIDEO RETRIEVAL FOR AN INSTRUCTIONAL TELEVISION SYSTEM

Deyrol E. Anderson, St. Paul, Minn., assignor to Display Systems Corporation, St. Paul, Minn.

Filed Sept. 3, 1970, Ser. No. 69,312
Int. Cl. H04n 7/18
U.S. Cl. 178—6.8 10 Claims

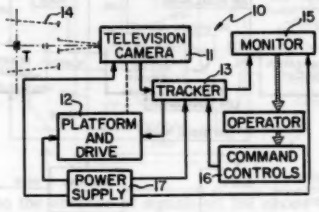


An instructional television system is provided for making available non-print learning materials upon request. The instructional system includes a central library store for storage of programs of learning materials. Learning materials are selectively transmitted via a TV transmitter link after being addressed with a predetermined three variable (tone, duration and period of silence) code. The code serves to "unclock" or activate one or more decoders disposed at a plurality of subscriber stations through a TV receiver at the corresponding subscriber station. Each decoder at a subscriber station can be programmed to any one of a plurality of two-tone sequential codes. The activated encoder serves to actuate an associated video tape recorder to record the selected transmitted material after which all remote subscriber video tape recorders previously activated by the coded transmission signal are deactivated.

3,729,582
TRACKING SYSTEM TRACKER UNIT

Neil S. Deye, and Richard B. Kuhn, both of Columbus, Ohio, assignors to North American Rockwell Corporation

Division of Ser. No. 403,396, Oct. 12, 1964. This application Jan. 18, 1967, Ser. No. 610,459
Int. Cl. H04n 3/00
U.S. Cl. 178—6.8 12 Claims

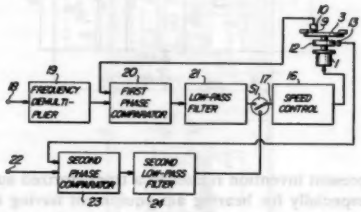


Apparatus and methods processing the video signal of a television camera sensor into a tracking error correction signal form used to control the viewing axis of the television camera sensor in tracking alignment with respect to a detected target. A pre-gate or post-gate extension, or both, is combined with the basic tracker unit tracking gate pulse to develop improved tracking control in directions at right angles to the television camera sensor direction of line scanning.

3,729,583
ROTARY HEAD TYPE MAGNETIC RECORDING AND REPRODUCING UNIT

Osahiko Yano, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed Nov. 27, 1970, Ser. No. 92,967
Claims priority, application Japan, Dec. 4, 1969, 45/97589
Int. Cl. H04n 1/28; G11b 21/4
U.S. Cl. 178—6.6 P 3 Claims

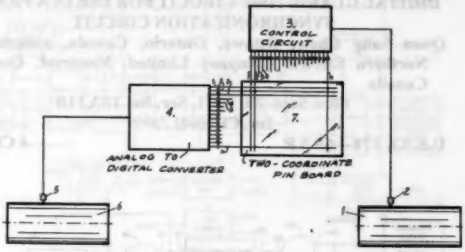


A rotary type magnetic recording and reproducing unit, in which high frequency fluctuating components in the speed of the rotary head are suppressed while maintaining a predetermined rotational phase of the rotary head with respect to the vertical synchronizing signal of the television signal to be recorded by preliminarily controlling the rotational phase of the rotary head such that a particular phase difference between the phase of a low frequency pulse series timed to a certain rotational phase of the rotary head and the phase of the vertical synchronizing signal in the television signal to be recorded is provided and subsequently controlling the rotational phase of the rotary head such that the phase of a high frequency pulse series timed to the afore-said certain rotational phase of the rotary head is brought into coincidence with the phase of the horizontal synchronizing signal in the television signal to be recorded.

3,729,584
APPARATUS FOR THE PREPARATION OF SCREEN PRINTING FORMS WITH AN ADJUSTABLE RELATION BETWEEN GREY VALUES OF THE PATTERN AND GREY VALUES OF THE PRINTING FORMS

Ferdinand A. de Vos, Amsterdam, and Jan H. ter Steege, Abcoude, both of Netherlands, assignors to Werkspoor-Amsterdam N.V., Amsterdam, Netherlands

Continuation of Ser. No. 776,320, Nov. 18, 1968, abandoned. This application April 20, 1971, Ser. No. 135,732
Claims priority, application Netherlands, Dec. 1, 1967, 6716368
Int. Cl. G03f 3/08; H04n 5/76
U.S. Cl. 178—6.6 B 8 Claims

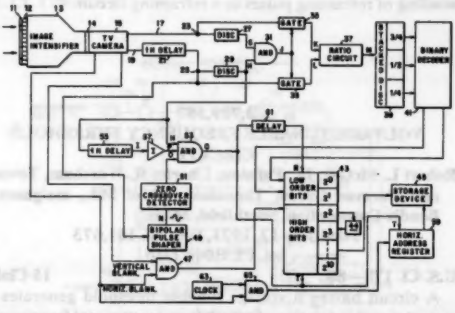


The instantaneous analog output of a scanning device is converted to one of a plurality of digital signals each of which corresponds to a different level of the analog signal. The output of the scanning device is a function of the local intensity of a pattern and the digital signals appear at a plurality of individual output terminals. An engraving device includes a plurality of input terminals which control its cutting movement, and these input terminals are connected to the digital output terminals at a two-coordinate pin board so that the contrast of a pattern being scanned may be altered at will at the printing form being engraved.

3,729,585
DEVICE AND METHOD FOR IMPROVING THE VERTICAL RESOLUTION OF A TWO-DIMENSIONAL TELEVISION-BASED RADIATION DETECTION SYSTEM

Jackson B. Davidson, and Arthur L. Case, both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 26, 1971, Ser. No. 175,230
Int. Cl. H04n 5/14
U.S. Cl. 178—7.2 7 Claims



A device and method have been provided for improving the vertical resolution in a television-based radiation detection system. Impinging radiation detected in the form of scintillations occurring in a crystal is recorded by a television camera

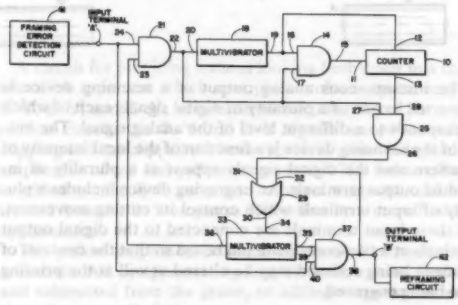
tube. As the information-containing target of the camera tube is scanned, each preceding horizontal scan is delayed one horizontal scan time and compared with the instant scan for coincidence of image, and if there, taking the ratio of the images, followed by testing of the resultant amplitude for proper location in a memory device. The vertical resolution is enhanced beyond that implied by the number of horizontal scans.

3,729,586

DIGITAL GUARD-TIME CIRCUIT FOR USE IN A FRAME SYNCHRONIZATION CIRCUIT

Quon Sang Chow, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Sept. 23, 1971, Ser. No. 183,110
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 R **4 Claims**



A digital counter is responsive to framing error pulses for providing a signal after a predetermined number of error pulses have been counted within a predetermined interval of time. Access to the counter by the error pulses is controlled by a first retriggerable monostable multivibrator which has a time constant greater than the time duraction of one frame and less than the time duration of N frames, where N is determined by the forward guard-time and the tolerable mis-frame rate of the system. The signal from the counter is used to trigger on a second retriggerable monostable multivibrator which determines the backward guard-time of the circuit and controls the sending of reframing pulses to a reframing circuit.

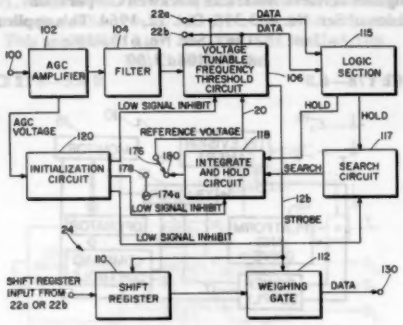
3,729,587

VOLTAGE TUNABLE FREQUENCY THRESHOLD CIRCUIT

Robert L. McGill, Jr., Fallston; Charles R. Worsham, Towson, and Norman Green, Timonium, all of Md., assignors to Bendix Corporation, Southfield, Mich.

Filed July 12, 1971, Ser. No. 161,673
Int. Cl. H04b 1/16
U.S. Cl. 178—88 **15 Claims**

A circuit having a voltage tunable threshold generates an output signal indicative of whether an input signal frequency is above or below the threshold frequency. A ramping signal is started and terminated at predetermined points on the input signal frequency waveform. The ramp amplitude at termination is compared against a d.c. reference voltage proportional to the threshold frequency to indicate whether the input signal frequency is above or below the threshold. The threshold circuit is also shown used in an adaptive frequency shift keying demodulator. The demodulator threshold analyzes a received



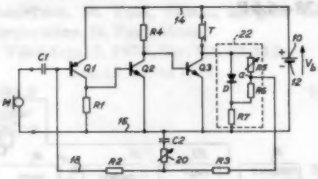
reference frequency and generates a d.c. reference voltage level for the frequency threshold circuit proportional to the reference frequency.

3,729,588

TRANSISTORIZED AMPLIFIER

Ole Berland, Horsholm, Denmark, assignor to American Danish Oticon A/S (Aktienselskabet William Demant), Copenhagen, Denmark

Filed Dec. 29, 1969, Ser. No. 888,343
Claims priority, application Great Britain, Dec. 31, 1968, 61,958/68
Int. Cl. H03f 1/30
U.S. Cl. 179—1 A **7 Claims**



The present invention relates to a transistorized audio amplifier especially for hearing aid equipment having an input stage and an output stage with a sound reproducer in the output stage between the collector of the output transistor and one battery terminal and with negative DC feedback between the output stage and the input stage. The base-emitter diode of the input is connected in such a manner as to provide stabilization of the voltage drop across the sound reproducer.

3,729,589

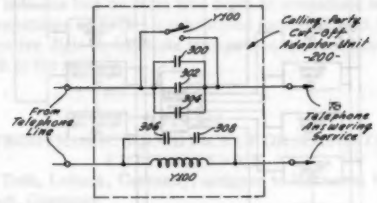
ADAPTER UNIT FOR TELEPHONE ANSWERING INSTRUMENT

Elmer C. Bonsky, Long Beach, and Lawrence A. Curtis, Huntington Beach, both of Calif., assignors to T.A.D. Avanti, Inc., Paramount, Calif.

Filed Sept. 29, 1971, Ser. No. 184,702
Int. Cl. H04m 1/64
U.S. Cl. 179—6 R **2 Claims**

An improved electronic adapter unit is provided which is intended to be interposed between the telephone line and a telephone answering instrument, and which serves to disconnect the instrument from the phone line in the event the

calling party hangs up, or is disconnected, so as to prevent dial tones, busy signals, or the like from being recorded by the answering instrument. The adapter unit of the invention finds particular utility in conjunction with the voice operated type of telephone answering instrument, since such instruments



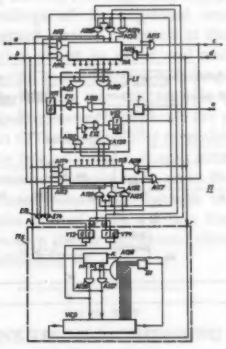
respond to the absence of signals on the phone line to turn themselves off, and often the presence of a dial tone, busy signal, or the like, cause the instrument to remain energized, and to continue to record the received tone, even though there is no message being received over the line.

3,729,590

APPARATUS FOR TRANSMITTING A DATA FLOW BY MEANS OF A PCM-FLOW

Walter Herbert Erwin Widl, Bandhagen, and Orjan Mats Mattsson, Taby, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Jan. 20, 1972, Ser. No. 219,243
Claims priority, application Sweden, Feb. 5, 1971, 1459
Int. Cl. H04j 3/04
U.S. Cl. 179—15 AP **2 Claims**



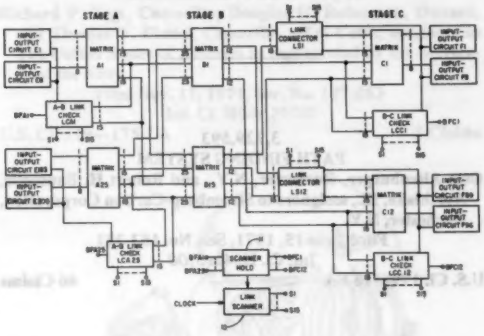
A method and an apparatus, respectively, for transmitting a data flow by means of a PCM-flow from a transmitter terminal to a receiver terminal, the bits of the data flow being timed to the bits of the PCM-flow during a selected time slot and the bit rate of the data flow that is regenerated at the receiver terminal being precisely equal to the bit rate of the data flow at the transmitter terminal. This is accomplished according to the principle of the invention by dividing the data flow at the transmitter terminal into short and long groups of bits which alternate with each other and which are mutually identified by means of at least one identification bit joined to each one of the bit groups, and by having at least two control information bits that indicate whether synchronism, lagging or leading respectively exists for the data flow in relation to the PCM-flow, joined to the short bit groups so as to drive at the receiver terminal a bit timing pulse generator into synchronism with the data flow at the transmitter terminal.

3,729,591

PATH FINDING SYSTEM FOR A MULTI-STAGE SWITCHING NETWORK

Klaus Gueldenpfennig, Penfield, and Stanley L. Russell, Webster, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,593
Int. Cl. H04q 3/42
U.S. Cl. 179—18 GE **24 Claims**



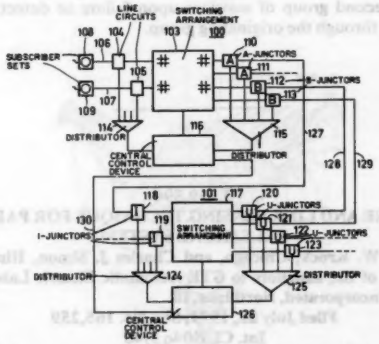
A path finding system for effecting selection and interconnection of electrical circuits through a network of switching matrices interconnected by links to provide plural paths between opposite ends of the network. Two of the circuits on opposite ends of the network are marked for connection. Switching units are included in at least two network stages that are separated by at least one additional stage to provide signals designating the busy-free condition of the links connected thereto. A detection circuit simultaneously scans the individual link interconnections to both the two stages to detect a free path. When a combination of free links defining a free path has been detected, the scanning is stopped and the connection through the network is completed via the free links.

3,729,592

TELECOMMUNICATION SYSTEM

Robert Bertold Buchner, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 105,022
Claims priority, application Netherlands, Jan. 13, 1970, 7000394
Int. Cl. H04q 3/42
U.S. Cl. 179—18 FC **1 Claim**



Telecommunication system comprising a transit exchange and a local exchange connected thereto through a group of

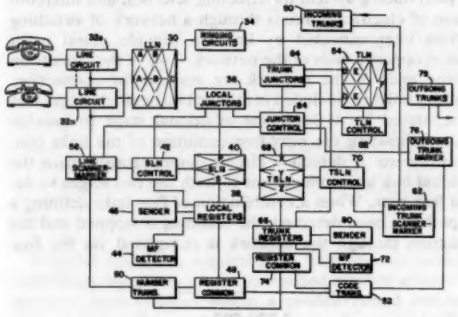
junction lines, in which at the reception of an incoming call from the transit exchange which is intended for a subscriber line connected to the local exchange, a connecting channel is established in the local exchange between the called subscriber line and an arbitrary free junction line of said group and the identification of this junction line is transferred to the transit exchange, in which subsequently a connecting channel is established from the line from which the said call originated to said junction line.

3,729,593

PATH FINDING SYSTEM

Otto Altenburger, Rochester, N.Y., and Robert H. Bansemir, Northlake, Ill., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed June 15, 1971, Ser. No. 153,221
Int. Cl. H04m *3/00*
U.S. Cl. 179—18 EA **46 Claims**



A path finding system for effecting selection and interconnection of electrical devices through a network of switching matrices providing plural paths between each input and each output thereof including scanning means for determining a free path to a selected input therefrom and non-reactive means for restricting path selection to the next stage whenever such stage requires another scanner for free paths thereafter. Also including a re-entry function from one group of matrices to a second group of matrices upon failure to detect direct routes through the originating group.

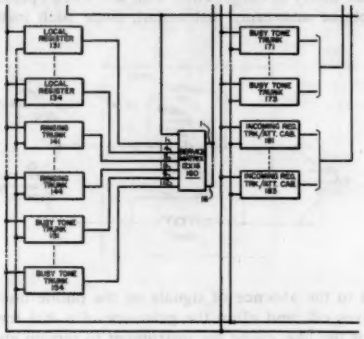
3,729,594

LINE AND LINK SENSING TECHNIQUE FOR PABX TELEPHONE SYSTEM

Elmer W. Krock, Chicago, and Charles J. Simon, Hinsdale, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 22, 1971, Ser. No. 165,259
Int. Cl. H04q *3/48*
U.S. Cl. 179—18 AB **9 Claims**

A technique for detecting the busy or idle status of lines, links and peripheral equipment in an electronic private branch telephone system. Each crosspoint in the system includes an extra contact over which a sensing path is established. Ring



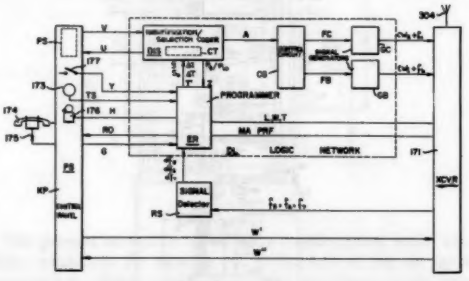
cores provide an indication of a completed path which is noted by the telephone system's common control equipment.

3,729,595

RADIOTELEPHONE SYSTEM WITH CENTRAL OFFICE HAVING INDIVIDUAL PROCESSORS ASSIGNABLE TO RESPECTIVE MOBILE UNITS ABOARD COMMUNICATING VEHICLES

Luigi Sarati, and Vincenzo Intini, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed Feb. 4, 1971, Ser. No. 112,562
Claims priority, application Italy, Feb. 4, 1970, 20202 A/70; Feb. 9, 1970, 20380 A/70
Int. Cl. H04q *7/04*
U.S. Cl. 179—41 A **17 Claims**



A central office, designed for short-wave radiocommunication with mobile units aboard several vehicles in its area, has a plurality of fixed processing units operating on different frequency channels to communicate with various vehicle-borne mobile units in the area. Each processing unit includes a programmer (PG) which measures the response periods of a mobile unit to calling and switching signals transmitted by the central office and terminates the connection in the case of excessive delays. Each mobile unit has a transceiver tunable to any of these channels under the control of a ring counter (CA) which, on being started by an alert signal from the central office (in response to an incoming call) or by actuation of a hook switch aboard the vehicle (to initiate an outgoing call), drives the transceiver through all or part of a scanning cycle until a free channel has been found or until the search is halted by a concurrently actuated delay counter (CR). In either case, the ring counter locks the transceiver to the channel last explored until the next call is initiated. Each channel comprises two carrier waves modulated by a selected pair of audio

frequencies out of a total of six such frequencies ($f_1 - f_6$) available for the transmission of numerical information in either direction; a seventh frequency (f_7) is used in combination with two of the others (f_5, f_6) to pass switching or supervisory signals from the central office to the vehicle. If the call number of the mobile unit and/or of a station called from the vehicle includes two or more like digits in immediate succession, a repetition code (R) is substituted for the second, fourth etc. iterative digit to facilitate recognition of transition from one digit to the next.

3,729,596

ELECTRODYNAMIC SOUND PICKUP OR SOUND-TRACK CUTTING DEVICE

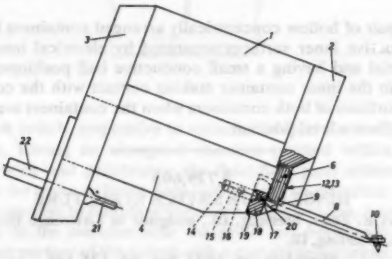
Miklos Toth, Lubeck, Germany, assignor to Hermann Wilms, Lubeck, Germany

Filed April 27, 1971, Ser. No. 137,817

Claims priority, application Germany, April 29, 1970, P 20 20 903.4

Int. Cl. H04r 9/16

U.S. Cl. 179—100.41 K **5 Claims**



An electrodynamic sound pickup which also functions as a sound-track cutting device, two angularly disposed preferably stereophonic recordings of an engraved sound track are sensed by a phonograph needle mounted at the free end of a needle arm oscillating about its other end and carrying two transducer coils having their effective coil range disposed in a magnetic air gap formed by two spaced pole shoes opposing each other. The winding planes of the coils are arranged transversely with respect to the longitudinal direction of the needle arm, and one of the two pole shoes is split at its end adjacent the air gap accommodating both coils, so as to form a pair of pole-shoe fingers each extending through the free central space of each of the pair of coils wherein the effective coil portions disposed within the air gap extend along an arc with a center angle not exceeding 90°.

3,729,597

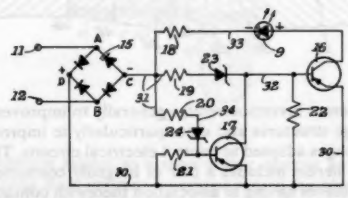
TELEPHONE TRUNK-MONITORING PROBE INSTRUMENT

Jim C. Garrett; Robert H. Johnson, and Jack Shelton, all of 3300 East Spring Street, Long Beach, Calif.

Filed Aug. 3, 1971, Ser. No. 168,670

Int. Cl. H04m 3/22; H04b 3/46

U.S. Cl. 179—175 **4 Claims**



A pencil-like instrument for monitoring telephone trunk lines in a manner that will not interfere or affect said lines, if in use, said instrument comprising a handle that constitutes a casing which houses a circuit board mounting all of the components of the instrument including a probe element which extends from one end of the casing, and a visual indicator disposed in the opposite end and visible from that end.

3,729,598

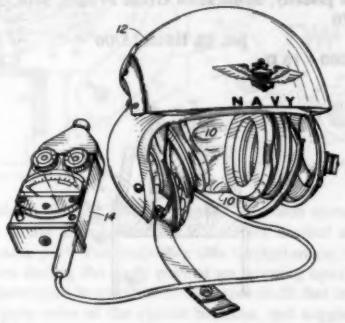
EARPHONE RECEIVER ATTENUATION MEASUREMENT TECHNIQUE

Richard P. Tegt, Camarillo; Douglas G. Robertson, Oxnard, and Thomas V. Blattel, Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 11, 1971, Ser. No. 197,863

Int. Cl. H04r 29/00

U.S. Cl. 179—175.1 A **3 Claims**



A system for measuring the effectiveness of the sound attenuating function of an earphone sound attenuation cover by employing the earphone transducer as a microphone and measuring the noise level with the ear cover in place on the user's ear and with the cover removed, the difference in decibels being interpreted as the acoustic attenuation provided by the ear cover.

3,729,599

ELECTRICAL DISTRIBUTION AND CURRENT COLLECTING DEVICE FOR HIGH SPEED VEHICLES

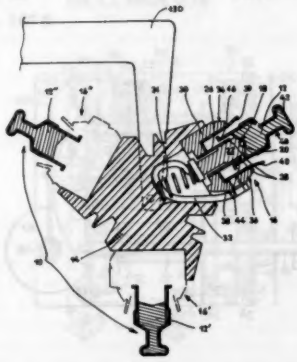
Jean-Pol Payen, 38 Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed Oct. 6, 1970, Ser. No. 78,551

Claims priority, application France, Dec. 2, 1969, 6941624; Sept. 11, 1970, 7033175; Sept. 11, 1970, 7033176

Int. Cl. B60l 5/08

U.S. Cl. 191—49 **8 Claims**



A high speed vehicle is electrically feeded by a movable collector head running in a passageway defined by a plurality of

regularly spaced apart multi-phase energized conductive rails. To improve the guiding characteristics of the collector head, mechanical coupling means are provided between the driven collector head and the driving vehicle such that the resultant of the force exerted by the coupling means on the collector head is substantially directed in the direction of movement of the collector head.

3,729,600

SLIDE SWITCH ASSEMBLY WITH RESILIENT BRIDGING CONTACT AND TERMINAL STRUCTURE ADAPTABLE TO 8/N POLE CONFIGURATIONS

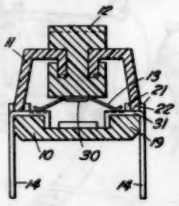
Nigel Allan Solomon, Wembley Park; Nelson Frederick John Godfrey, Leighton Buzzard, and Alan James Boxell, Bletchley, all of England, assignors to ERG Industrial Corporation Limited, Dunstable, England

Filed Aug. 28, 1971, Ser. No. 184,507

Claims priority, application Great Britain, Sept. 30, 1970, 46,575/70

Int. Cl. H01h *15/06*

U.S. Cl. 200—16 D **11 Claims**



An improved miniature switch having a pack shape and size, and leadout configuration approximately the same as that of a dual-in-line integrated circuit pack, thus facilitating tooling operations in printed circuit board manufacture, and automatic insertion of components. There are eight pairs of corresponding terminals. Shorting links initially between adjacent terminals are selectively removed, and an appropriate length slider is provides with one, two, or four contacts coupling corresponding terminals, thus making the switch one pole-eight way, two pole-four way, or four pole-two way.

3,729,601

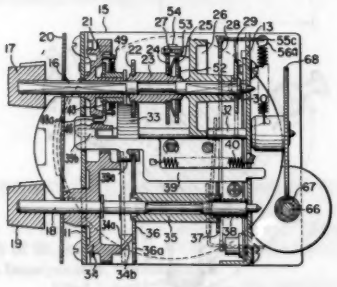
TIME-SETTING DEVICE

Etsuzo Yokoyama, Tachikawa-shi, and Yasuya Oono, Nakano-ku, both of Tokyo, Japan, assignors to Kabushiki Kaisha T.I.O. and Hitachi, Limited, Tokyo-to, Japan

Filed Sept. 14, 1971, Ser. No. 180,265

Int. Cl. H01h *7/08, 43/10*

U.S. Cl. 200—38 R **8 Claims**



For programmed control of an on-off switch provided with a first cam fixedly mounted on a shaft so as to operate the switch according to its angle of revolution. A second cam is similarly mounted on the shaft which is rotatably supported in the adjacency of the switch, the second cam selectively conveying to the first cam the rotation which proceeds in step with the lapse of time. Additional means are provided for selectively imparting rotation to the first cam through the shaft.

3,729,602

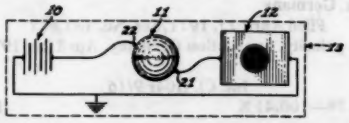
TILT RESPONSIVE SWITCH WITH BALL CONTACT ACTUATING STRUCTURE

Robert C. Myers, P.O. Box 1981, Scottsdale, Ariz.

Filed Oct. 27, 1971, Ser. No. 192,922

Int. Cl. H01h *35/14*

U.S. Cl. 200—61.52 **8 Claims**



A pair of hollow concentrically arranged containers having conductive inner surfaces separated by electrical insulating material and having a small conductive ball positioned in a hole in the inner container making contact with the conductive surfaces of both containers when the containers are tilted away from a level position.

3,729,603

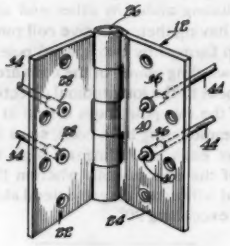
HINGE PLATE SWITCH STRUCTURE

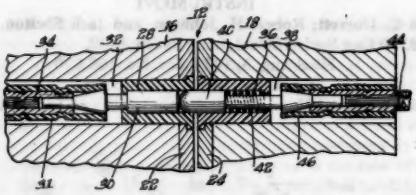
Robert E. Foltz, Sterling, Ill., assignor to Lawrence Brothers, Inc., Sterling, Ill.

Filed Aug. 26, 1971, Ser. No. 175,148

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.7 **3 Claims**





The present invention relates generally to improvements in door hinge structures and more particularly to improvements in door hinges adapted to control electrical circuits. The hinge disclosed herein includes a pair of hingedly connected hinge plates or leaves having in association therewith contact means for opening and closing an electrical circuit, one hinge leaf being mountable upon the vertical edge of the door and the other mountable upon a door frame.

3,729,604

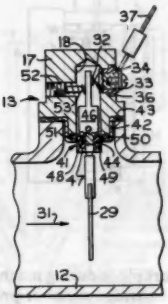
DIAPHRAGM SEAL WITH FLUID FILLED CAVITY FOR PADDLE OR FLUID FLOW RESPONSIVE SWITCH

Eugene R. Groff, Chillicothe, and James P. Welsh, Morton, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 31,084, April 23, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 201,599

Int. Cl. H01h *35/40*, *9/04*

U.S. Cl. 200—81.9 R 6 Claims



A flow switch, responsive to variation of fluid flow within a conduit, having an elongated member pivoted within the switch body and penetrating the fluid flow path within the conduit for make or break engagement with an electrical contact in response to fluid flow variations in the conduit. A seal is secured to the member near the pivot and overlaps a surrounding portion of the switch with a cup-shaped retainer urging the seal into engagement with the switch body. A cavity in the switch adjacent the seal is filled with fluid to reduce flexure of the seal and increase its effective life.

3,729,605

PRESSURE-RESPONSIVE ELECTRIC SWITCH

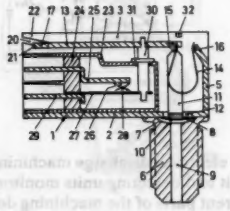
Jens Nicolai Andresen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jan. 5, 1972, Ser. No. 215,489

Claims priority, application Germany, Jan. 12, 1971, P 21 01 196.1

Int. Cl. H01h *35/40*

U.S. Cl. 200—83 P 1 Claim



The invention relates to a snap action electric switch assembly having fluid pressure operated means for biasing the lever means in the direction opposite the biasing force of the snap action spring in response to pressurized fluid being directed to the chamber.

3,729,606

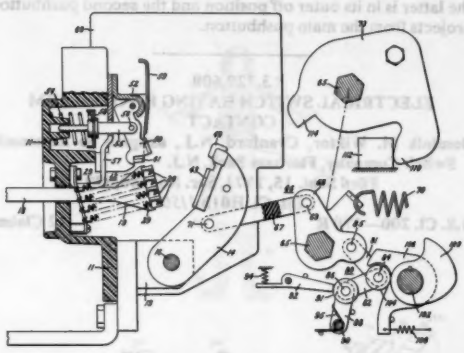
ELECTRIC CIRCUIT BREAKER WITH MEANS FOR PROMOTING CURRENT TRANSFER TO ARCING CONTACTS

Ernest H. Bogert, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed March 7, 1972, Ser. No. 232,567

Int. Cl. H01h *33/12*

U.S. Cl. 200—146 R 4 Claims



A polyphase electric circuit breaker in which opening acceleration at the arcing contacts is severely limited until the main contacts part. For imposing this limitation on opening acceleration during the early part of an opening operation, a large flywheel mass is attached to the cross shaft that interconnects the pole units of the circuit breaker, and toggles interconnecting the cross shaft and the contacts are maintained in a zone near dead center until the main contacts part.

ERRATUM

For Class 200—166 see:
Patent No. 3,729,612

3,729,607

PUSHBUTTON RESET CIRCUIT BREAKER HAVING PERIPHERAL CONTACT CONDITION INDICATOR MEANS

Jakob Ellenberger, Altdorf near Nuernberg, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf near Nurnberg, Germany

Filed June 7, 1972, Ser. No. 260,509

Claims priority, application Germany, June 23, 1971, 9 71 24 044.3

Int. Cl. H01h *9/16*

U.S. Cl. 200—167 R 7 Claims

An overload circuit breaker which has a main pushbutton which when depressed closes the circuit breaker and has a

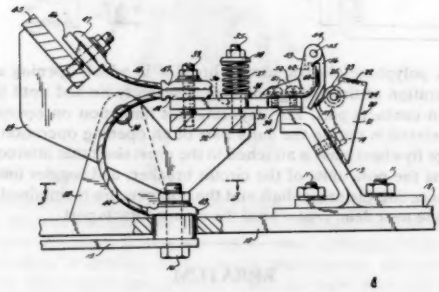
central cavity in its outer end, and a second pushbutton which, when both pushbuttons are depressed, is held arrested fully within the cavity and, when the main pushbutton is released, is likewise released and then projects for a certain distance out of the cavity and thus outwardly beyond the end surface of the main pushbutton. The end surfaces of both pushbuttons are preferably of the same color so that, when depressed, the second pushbutton will not be noticeable, but the peripheral surface of the second pushbutton is preferably of a different color contrasting with the color of the main pushbutton when the latter is in its outer off position and the second pushbutton projects from the main pushbutton.

3,729,608

ELECTRICAL SWITCH HAVING PIVOTED ARM CONTACT

Dominik M. Wiktor, Cranford, N.J., assignor to Automatic Switch Company, Florham Park, N.J.

Filed Sept. 15, 1971, Ser. No. 180,679
Int. Cl. H01h *1/50*
U.S. Cl. 200—170 R **12 Claims**



A switch having relatively movable contacts, one of the contacts including a support member and an arm pivoted to the support member and engageable with the other contact. The other contact is preferably a roller rotatable about an axis extending across the path of movement between the contacts, the roller being engaged by the pivoted arm when the switch closes. A spring urges the arm toward the roller. The arm and the support member form a looped path for electric current so that magnetic force created by the flow of current urges the arm toward the roller. The relatively movable contacts may be arcing contacts of a switch having main relatively movable contacts.

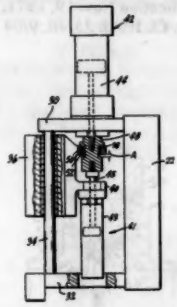
3,729,609

MULTI-ELECTRODE ELECTRICAL DISCHARGE MACHINING APPARATUS

John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Filed Feb. 8, 1971, Ser. No. 113,410
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 G **11 Claims**

Electrical discharge machining apparatus comprising a frame, a plurality of substantially parallel electrodes, a carriage mounted on the frame for guided movement in a vertical direction, and a cartridge assembly supporting the electrodes and removably mounted on the carriage so that the electrodes extend vertically. Manually operable gripper means is provided for feeding the electrodes downwardly after each machining operation into engagement with the workpiece so as to compensate for electrode wear experienced during one or more preceding machining operations. Positive stop anti-short power means is combined with the carriage to enable retraction of the electrodes out of engagement with the workpiece into a predetermined spaced relation with the workpiece at least as great as the desired spark gap spacing between the electrodes and the workpiece during machining. The cartridge assembly includes a cartridge member provided with contact blocks connected to a supply of current and engaged with the electrodes during machining.

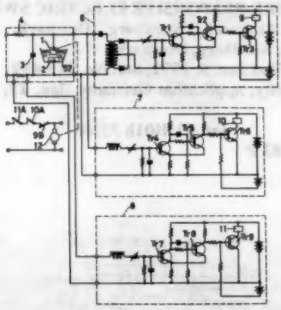


3,729,610

ELECTRICAL DISCHARGE MACHINING DEVICE USING LOGICAL CONTROL

Iwao Kondo, 39-9-Kita-machi 1-chome, Tokyo, Japan

Continuation-in-part of Ser. No. 9,566, Feb. 9, 1969, Pat. No. 3,632,942. This application Nov. 22, 1971, Ser. No. 200,773
Claims priority, application Japan, Feb. 7, 1969, 45/9554; Feb. 7, 1969, 45/9555; June 11, 1969, 45/46422; June 11, 1969, 45/46423; June 11, 1969, 45/46424; July 24, 1969, 45/58503; Oct. 2, 1969, 45/78754
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 C **9 Claims**



An automatic electrical discharge machining device, including a logic circuit and detecting units monitoring voltages and currents at different parts of the machining device circuit. The detecting units deliver their outputs to the logic circuit, for determining the short -circuit, large gap conductance, sustained arcing, and other detrimental conditions at the discharge gap, by suitably combining the outputs from the detecting units. Automatic control is made in response to the output from the logic circuit for regulating an electrode or various voltage pulses.

3,729,611

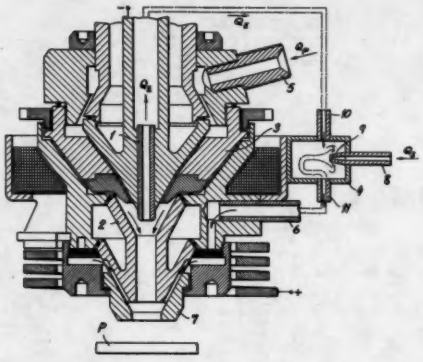
PLASMA GENERATOR

Alexandru Vas, Timisoara, Romania, assignor to Centrul de Sudura Si Incercari La Oboseala Timisoara, Timisoara, Romania

Continuation-in-part of Ser. No. 721,843, April 16, 1968, Pat. No. 3,594,609. This application June 8, 1971, Ser. No. 151,108

Int. Cl. B23k *15/00*

U.S. Cl. 219—121 P 2 Claims



A plasma generator with a hollow electrode connected to a venturi pump which draws a portion of the gas out of the arc chamber in a direction away from the workpiece to stabilize a molten-metal pool formed by the plasma generator. The withdrawn portion of the gas is recycled to the region around the plasma arc between the arc chamber and the workpiece.

3,729,612

SWITCH MECHANISM INCLUDING QUICK DETACHABLE ELECTRICAL CONNECTOR MEANS

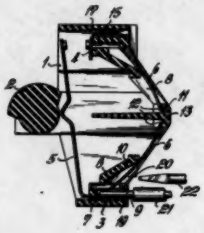
Johannes Schmale, Ludenscheid, Germany, assignor to Brown, Boveri & Cie. A. G., Mannheim, Germany

Filed Oct. 18, 1971, Ser. No. 190,189

Claims priority, application Germany, Oct. 31, 1970, P 20 53 595.9

Int. Cl. H01h *1/58;* H01r *9/12*

U.S. Cl. 200—166 CT 7 Claims



A device including an electric connector for insertion of the bare end of a cable which is held in contact position therein by a pre-biased leaf spring.

3,729,613

HEATING GARMENT

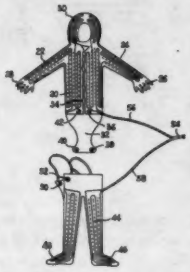
Raymond Deloire, Vaucresson, and Jacques Durand, Le Mans, both of France, assignors to La Spirotechnique and Chromex, Paris, France

Filed July 7, 1971, Ser. No. 160,298

Claims priority, application France, July 9, 1970, 7025493

Int. Cl. H05b *1/00*

U.S. Cl. 219—211 13 Claims



Heating garment intended for hindering little the wearer's movements and for uniformly distributing the warmth. Heating elements are placed inside passages made by sewing two fabrics the one with the other along parallel lines. The heating elements are not sewn to the fabrics but are maintained by the sewing lines. The form of the heating elements allows them to stretch.

3,729,614

DEVICE FOR ACCELERATING THE SETTING OF CONCRETE

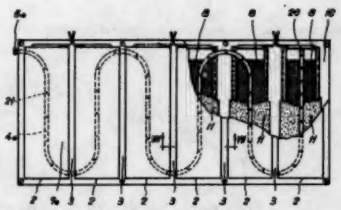
Christian Jacques Emile Joseph Martinet, 61 Rue du President-Wilson, 92-Levallois-Perret, France

Filed Feb. 10, 1971, Ser. No. 114,317

Claims priority, application Spain, Feb. 12, 1970, 376780

Int. Cl. H05b *1/00*

U.S. Cl. 219—345 6 Claims



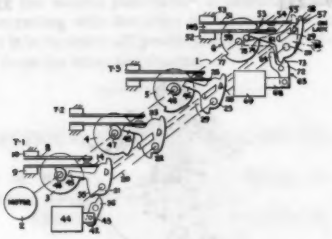
A device for accelerating the setting of concrete elements wherein as well as heating the surface of the concrete, water is supplied to said surface with a view to obtaining a suitable degree of humidity in contact with said surface during setting, for which purpose a blanket is used which covers all or part of the surface of the concrete, said blanket having an internal electrical heating element, porous material linings and water conduction means which pass through the interior and supply water to the blanket which distributes the water, in liquid or vapor form, over the surface covered.

3,729,615

CONDITION CONTROL DEVICE AND SYSTEM

John L. Harris, Delafield, Wis., assignor to Deltrol Corp., Bellwood, Ill.

Filed April 12, 1971, Ser. No. 133,236
Int. Cl. H05b 1/02
U.S. Cl. 219—486 10 Claims



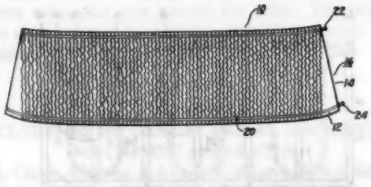
A timing device controls a group of electric heaters, turning them on in sequence in response to call for heat by a thermostat and turning them off in sequence when the call for heat is satisfied. The timer has two stopping points, one with the heaters off and the other with the heaters on. A single switch controls the timer motor and is opened by a timer can at the off and on positions. The switch is held open at the off position by an off latch and at the on position by an on latch. These latches are released by a solenoid controlled by the room thermostat. The latches are also controlled by a timer cam, the off latch being held released when the timer is in the on position, and the on latch being held out at the off position. The load switches for the heaters are also opened instantly by a second solenoid responding to an unfavorable condition. This same action releases the on latch to cause the timer to return to the off position.

3,729,616

ELECTRICALLY HEATED WINDOW

George A. Gruss, Mentor; Leslie H. Pfeiler, Willowwick, and George J. Polanka, Solon, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed July 26, 1971, Ser. No. 166,064
Int. Cl. H05b 3/06
U.S. Cl. 219—522 5 Claims



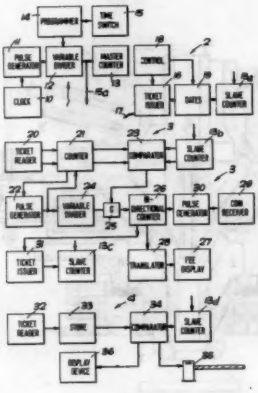
A laminated safety glass window is described having a clear polymer inner layer which includes a pattern of wrinkled resistance wires oriented in non-parallel random fashion so as to reduce glare from the wires when the window is used as a windshield. The individual resistance wires are partially embedded in the polymer sheet by a technique utilizing shrinkage of a thermoplastic polymer from its original dimensions when heated to an elevated temperature together with having the individual wires change configuration when relaxed from tension forces on the wire when first assembled with the polymer sheet. A method of forming the wire-incorporated polymer sheet member is also described along with equipment for automatically applying prestressed resistance wire to a thermoplastic sheet followed by heating the assembly under proper conditions to form the composite member.

3,729,617

FEE COMPUTING SYSTEMS

Roger Geoffrey Stone, Hayes, England, assignor to APT Controls Limited, London, England

Filed June 29, 1971, Ser. No. 157,982
Claims priority, application Great Britain, June 29, 1970, 31,295/70
Int. Cl. G06k 17/00
U.S. Cl. 235—61.7 R 4 Claims



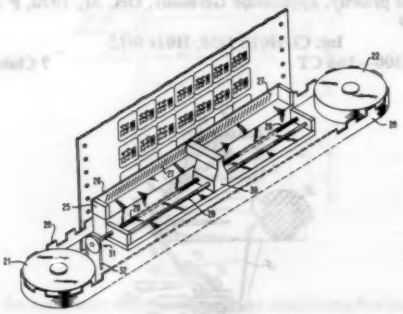
A parking fee computing system in which pulses representing units of real time are counted and the instantaneous count thereof is compared with a stored count read from a ticket. The stored count is changed by pulses from a coin operated device until there is parity between the stored count and the instantaneous count. The frequency of the first pulses are varied according to a preset program.

3,729,618

SCANNING MECHANISM AND PRINTER

Robert S. Drew, Knightdale, and John E. Jones, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 12, 1972, Ser. No. 261,850
Int. Cl. G06k 7/14; H04n 3/00
U.S. Cl. 235—61.11 E 4 Claims



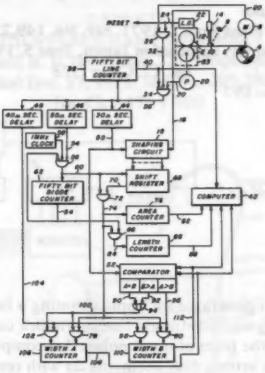
A printer for preparing labels including coded data is provided with an optical scanner having a plurality of spaced parallel slits in fixed registration with said printed coded data, a scanning slit having a substantially different orientation than said fixed slits and means for translating said scanning slits in a first direction to produce a multiplicity of limited distance scans in a second opposite direction.

3,729,619

APPARATUS FOR SURFACE INSPECTION OF MOVING MATERIAL WITH DEFECT TYPE RECOGNITION

John F. Laycak, W. Mifflin; Gerald J. Readal, O'Hara, and Samuel B. Preliwitz, Wilkinsburg, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed March 4, 1971, Ser. No. 121,093
Int. Cl. G06m 7/00
U.S. Cl. 235—92 DN 11 Claims



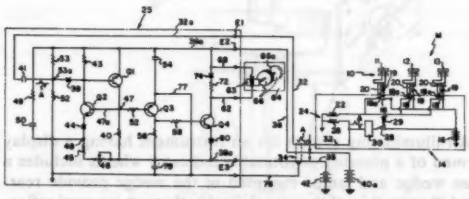
An inspection system for the surface of a strip of moving material where defects have a different appearance than the remainder of the strip. A plurality of photosensitive diodes positioned across the material detects defects periodically for a predetermined number of transverse scanning lines. Diode outputs are counted to give totals for area, length and maximum width of a defect in terms of scanning grids. A computer determines the defect shape, and therefore the type of defect, from the ratios between area, width, and length.

3,729,620

STROKE COUNTER MECHANISM

David H. Jones, Sarasota, Fla., assignor to Electronic Data Preparation Corporation, Sarasota, Fla.

Filed Oct. 4, 1971, Ser. No. 186,330
Int. Cl. G06m 3/12; H03k 21/30
U.S. Cl. 235—92 PD 7 Claims



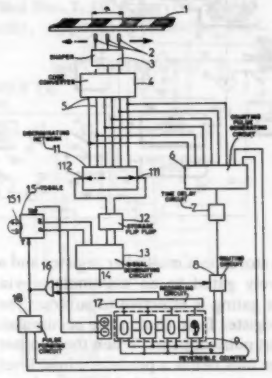
Stroke counting mechanism for counting the number of strokes which an operator makes in actuating the keys of a keyboard including apparatus for precluding a false count that otherwise would result when a key is stroked and held for a sustained period.

3,729,621

APPARATUS FOR MEASURING OR INDICATING MOVEMENT BY COMBINED ENCODING AND COUNTING

Jean Taisne, Fontenay-sous-Bois, France, assignor to Societe D'Optique, Precision Electronique Et Mecanique-Sopelem, Paris, France

Filed July 8, 1971, Ser. No. 160,731
Claims priority, application France, July 30, 1970, 7028153
Int. Cl. H03k 21/04
U.S. Cl. 235—92 GC 9 Claims



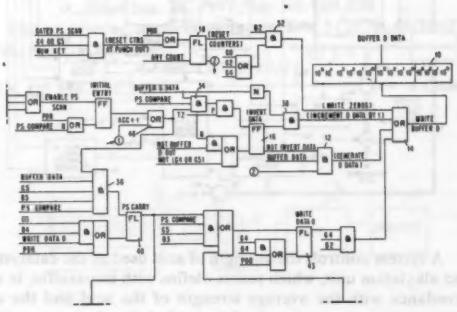
Relative movement between two members is sensed by a device yielding a signal during successive increments of movement. A first circuit means applies one pulse to a reversible counter for each incremental movement and a second circuit controls the direction of counting to accord with that of movement.

3,729,622

PRODUCTION STATISTICS COUNTER FOR KEY ENTRY DEVICE

John Lettieri, Woodstock, N.Y., and Roger H. E. Pett, Scarborough, Ontario, Canada, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1971, Ser. No. 193,828
Int. Cl. G07c 3/10
U.S. Cl. 235—92 DP 5 Claims



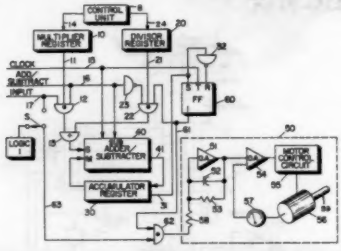
This specification describes a counter for measuring the output of a key entry operator. The counter totals the number of strokes the operator makes along with the number of cards produced by the operator and the number of errors made by the operator. The counter includes a shift register which stores in series the key stroke, card and error data described above. This register is synched with the key entry devices operating cycles so that data can be entered without interference with the machine operation.

3,729,623

METHOD FOR THE SELECTIVE MULTIPLICATION AND DIVISION OF A PULSE TRAIN AND A MULTIPLY/DIVIDE CIRCUIT THEREFOR

Leroy U. C. Kelling, Waynesboro, Va., assignor to General Electric Company, Lynn, Mass.

Filed Jan. 11, 1971, Ser. No. 105,365
Int. Cl. H03k 3/64
U.S. Cl. 235—151.11 12 Claims



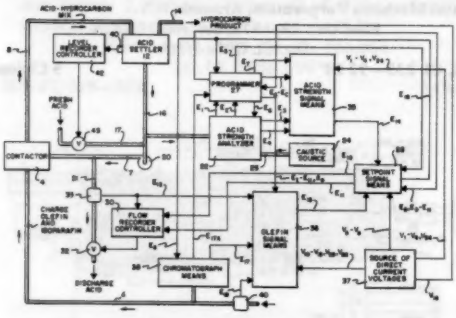
Numbers stored in a multiplier register and a divisor register are selectively gated to an accumulator via an adder/subtracter. The gating is effective to subtract the number in the multiplier register from that in the accumulator register each time an input pulse appears. When the number in the accumulator register falls below a predetermined level, the number in the divisor register is added thereto and an output pulse is produced.

3,729,624

MEANS AND METHOD FOR CONTROLLING THE STRENGTH OF ACID IN AN ALKYLATION UNIT

Walker L. Hopkins, Houston; Leland A. Chvatal, Port Arthur, and Richard R. Edwards, Groves, all of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Aug. 5, 1971, Ser. No. 169,443
Int. Cl. C07e 3/52; G06g 7/58
U.S. Cl. 235—151.12 13 Claims



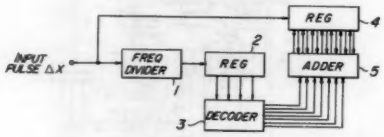
A system controls the strength of acid used as the catalyst in an alkylation unit, which reacts olefins with isoparaffin, in accordance with the average strength of the acid and the anticipated required strength of the acid. A signal corresponding to the average acid strength is developed by analog computers solving equations, hereinafter disclosed, using an output from an acid analyzer corresponding to the density of the acid and a signal corresponding to the volume of caustic used in analyzing the acid. An anticipated required acid strength signal is developed by an analog computer from signals, corresponding to the flow rate and composition of the olefin, from a flow rate sensor and chromatograph means, respectively, in accordance with equations hereinafter disclosed. Another analog computer provides signals for setting the set point of a flow recorder controller in accordance with the average acid strength signal, the anticipated required acid strength signal and equations hereinafter disclosed. The flow recorder controller controls the flow rate acid being discharged from the alkylation unit so as to control the quantity of fresh acid entering the alkylation unit thereby controlling the strength of the acid.

3,729,625

SEGMENTED STRAIGHT LINE FUNCTION GENERATOR

Masaru Inoue, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 2, 1971, Ser. No. 149,238
Claims priority, application Japan, June 5, 1970, 45/47966
Int. Cl. G06g 7/28
U.S. Cl. 235—197 12 Claims



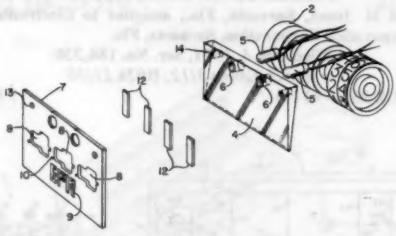
A function generator for approximating a function of x, $y = f(x)$, by a segmented straight line in which x coordinate values are given in the form of input pulses Δx, comprising means for preliminarily setting displacements Δy with respect to an input pulse Δx in accordance with the slope of said segmented straight line, in which a displacement Δy is arranged to be applied for each input pulse Δx to means for storing the function value corresponding to the integrated input pulses Δx.

3,729,626

INSTRUMENT LIGHTING SYSTEM WITH INWARD ILLUMINATION OF THE DISPLAY AND OUTWARD ILLUMINATION OF NOMENCLATURE AND INDEX MARKS

Wallace Thurlow, Newburyport, and Louis S. Trapasso, Winthrop, both of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Aug. 26, 1971, Ser. No. 175,215
Int. Cl. F21
U.S. Cl. 240—1 EL 9 Claims



An illuminating system for an instrument having a display formed of a plurality of rotatable indicator wheels includes a glass wedge and lamps mounted in the wedge provide rearward illumination of the wheel display through internal reflection of the light in the wedge. A metallic shield having suitable openings to permit display of the illuminated counter wheels is positioned in front of the wedge to minimize glare by blocking at least part of the light projected in the forward direction. In addition, the shield is so configured that a portion of the normally useless forwardly projected light is utilized to illuminate certain indices on the plate such as decimal points and the like. To this end, nomenclature marks such as those identifying the parameter being measured, or index marks such as

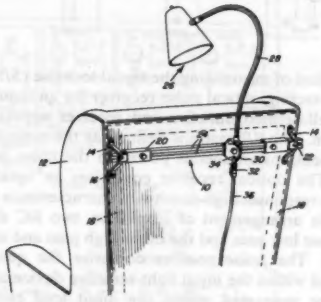
decimal points, hyphens, etc. are punched through the light shield and suitable diffusers/filters are positioned between the light wedge and these openings to permit illumination of the desired nomenclature and/or index marks by light projected in the forward direction. In this fashion, these elements are illuminated at varying degrees of intensity and/or color by light rays which normally represents lost or stray light, while at the same time, minimizing glare by blocking or elimination the bulk of the stray light from being projected outwardly toward the viewer.

3,729,627

ADJUSTABLE LAMP ASSEMBLY

Norman L. Littell, R. D. No. 1, Box 321, Aliquippa, Pa.

Filed Dec. 17, 1971, Ser. No. 209,295
Int. Cl. A47b *97/00*
U.S. Cl. 240—4 13 Claims



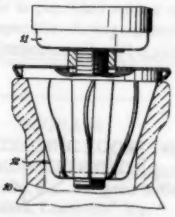
An adjustable lamp assembly comprising a pair of spaced parallel mounting bars adapted to be connected to a chair back by way of a pair of channel members mounted at their opposite ends, a lamp fixture connected to a support member adapted to be selectively positioned at any point along the mounting bars, the support member being pivotally adjustable with respect to the mounting bars to provide additional adjustment or to swing the lamp fixture behind the chair back when not in use.

3,729,628

LAMP CONVERSION UNIT

Frederic W. Schwartz, Providence, R.I., assignor to Cable Electric Products, Inc., Providence, R.I.

Filed Feb. 17, 1972, Ser. No. 227,163
Int. Cl. F21v *21/00*
U.S. Cl. 240—52.6 3 Claims



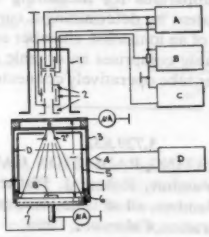
A unit for converting a bottle or similar receptacle having a neck into a lamp. The basic member of the unit consists of an integral one-piece molded plastic device having a central hollow core topped by a flat annular plate. A plurality of fins extend outwardly from the central core, the fins tapering down from the plate toward the bottom of the core. This member may be twisted into a bottle neck, the fins collapsing sufficiently to allow the entry. Also, the fins frictionally engage the neck to hold the member in place. A short hollow rod is passed through the core, the inner end having a hex nut threaded thereon. At the upper end, a flat washer plate covers the core plate and a bulb socket and switch is mounted on the exposed end of the rod to hold the assembly together.

3,729,629

METHOD FOR PRODUCING PREPARATIONS FOR ELECTROMICROSCOPIC EXAMINATION

Fritz Grasenick, and Erich Jakopic, both of Steyrergasse 17, A 8010 Graz, Austria

Filed Dec. 7, 1970, Ser. No. 95,725
Claims priority, application Austria, Sept. 24, 1969, 9020/69
Int. Cl. H01j *37/00*
U.S. Cl. 250—49.5 TE 3 Claims



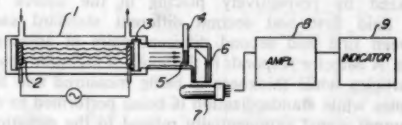
A method for the production of preparation for electron microscopic investigation which includes irradiating the objects to be investigated in a high vacuum with electrons of a low energy and regulating an accelerating voltage to control the irradiation-chemical reaction.

3,729,630

THERMOLUMINESCENCE READOUT INSTRUMENT

Tadaoki Yamashita, and Osamu Yamamoti, both of Hirakata, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 26, 1971, Ser. No. 109,920
Claims priority, application Japan, Feb. 5, 1970, 45/10451; Feb. 5, 1970, 45/10452
Int. Cl. G01t *1/11*
U.S. Cl. 250—71.5 R 4 Claims



A thermoluminescence readout instrument utilizing a thermoluminescence dosimeter element which is heated by infrared rays from a laser source and which emits thermoluminescence, the thermoluminescence being transformed into a photocurrent so as to detect the dose irradiated on the element. The device is characterized by having good reproducibility in the heating of the element, providing good reproducibility and reliability of measurement, and a reduction of the time required for the measuring operation.

3,729,631

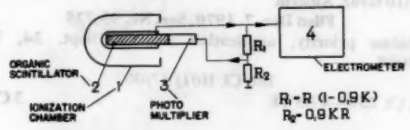
METHOD AND APPARATUS FOR THE MEASUREMENT OF MIXED GAMMA-NEUTRON RADIATION DOSE EQUIVALENT

Stanislaw Pszona, Paxinskiego 1A-9, Warszawa, Anin, Poland

Continuation-in-part of Ser. No. 691,767, Dec. 19, 1967, abandoned. This application May 22, 1970, Ser. No. 39,717

Int. Cl. G01t 3/00, 1/18, 1/20

U.S. Cl. 250—83.1 3 Claims



A method and apparatus for measuring mixed gamma-neutron dose equivalent by determining a current difference between the output of an ionization chamber and a scintillator which latter preferably comprises an organic compound and has a photomultiplier tube operatively connected therewith.

3,729,632

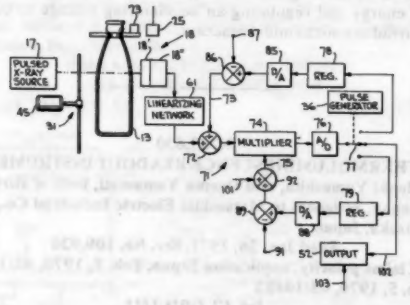
PENETRATING RADIATION GAUGE

Boong Y. Cho, Columbus, Robert J. Pfeifer, Worthington; Orval L. Utt, Columbus, all of Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Dec. 21, 1970, Ser. No. 100,331

Int. Cl. G01n 23/02

U.S. Cl. 250—83.3 D 21 Claims



A penetrating radiation gauge includes a pulsed x-ray source for determining wall thickness of articles moving past the source. The gauge is continuously standardized by respectively placing in the source radiation field first and second different standard samples between first and second different pairs of adjacent articles. A detector responds to the levels of radiation absorbed by articles while thickness is being measured and by the samples while standardization is being performed to derive an output signal exponentially related to the radiation absorption properties of the articles and samples. A linearizing network responsive to the detector converts the exponential relationship into a straight line function whereby a linear relationship between the magnitude of the detector output signal and the absorption property is derived. While the linearizing network is deriving a signal indicative of the radiation absorption properties of the first sample, the straight line relationship is adjusted so that the guage response is a point on the line having a predetermined output signal corresponding with the absorption properties of the first sample. While the linearizing network is deriving a signal indicative of the absorption properties of the second sample, the slope of the line is adjusted so that the guage derives an output signal having a predetermined magnitude corresponding with the absorption properties of the second sample.

3,729,633

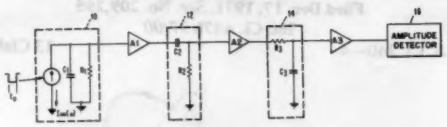
OPTICAL RECEIVER HAVING A MAXIMIZED SIGNAL-TO-NOISE RATIO

Stephen Eros, Gaithersburg, and Paul M. Thrasher, Bethesda, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 24, 1970, Ser. No. 92,394

Int. Cl. H04b 9/00

U.S. Cl. 250—199 1 Claim



A method of maximizing the signal-to-noise (S/N) ratio or a direct-detecting optical pulse receiver for an input pulse having a well-defined duration and receiver apparatus derived therefrom. The S/N ratio is defined as the ratio of the signal output peak instantaneous power to the noise output mean power. The optical receiver comprises an optical detector with fast-response, high-sensitivity characteristics followed by a cascade arrangement of amplifiers, two RC dividing networks, one low pass and the other high pass and an amplitude detector. The noise sources comprise the quantum noise generated within the input light-sensitive device and the thermal noise generated within the input load resistor of the device.

The dividing networks form a bandpass filter which is designed to maximize the S/N ratio. As a result, the time constants of the filters turn out to be substantially equal and the output load resistance of the detector is set as high as is practical. The method achieves a S/N ratio approaching that obtainable with an ideal matched filter for small values of the input pulse width (t_o), e.g., of the order of 10 nanoseconds. The S/N ratio improvement over prior art receivers is in the order of 20 db. The receiver is especially effective when t_o is less than 1 microsecond.

3,729,634

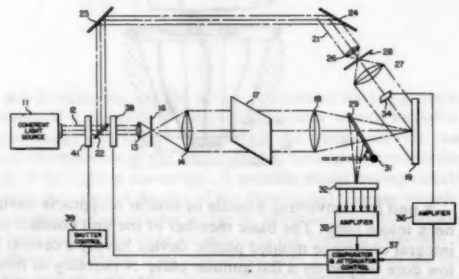
AUTOMATIC BEAM RATIO CONTROL SYSTEM FOR HOLOGRAPHY

Niels Jensen, Los Angeles; James T. Thomasson, Sunland, and Donald C. Mead, Granada Hills, all of Calif., assignors to Recognition Systems, Inc., Van Nuys, Calif.

Filed Sept. 20, 1971, Ser. No. 181,867

Int. Cl. G02b 27/00; G01j 1/36

U.S. Cl. 250—204 1 Claim



This invention comprises apparatus for controlling the ratio of the signal and reference beams in a system for making holographic filters for use in matched filter pattern recognition ap-

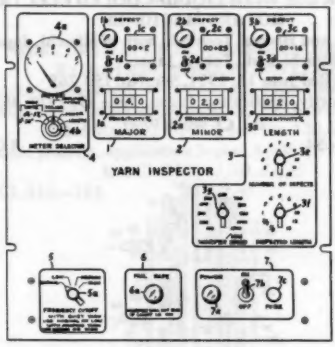
paratus. Means is provided for measuring the intensity of the spatial frequencies of a signal beam, and means is provided for measuring the intensity of a reference beam. The difference between the measured beam ratio and the optimum beam ratio controls an attenuator placed in either the reference beam path or the signal beam path. A shutter may also be controlled so that uniformity of exposure is maintained as the beam ratio is adjusted.

3,729,635

YARN INSPECTOR

Richard Shottenfeld, Jamaica, and Solomon Abilock, Brooklyn, both of N.Y., assignors to Lindly & Company, Inc., Mineola, N.Y.

Filed Oct. 14, 1970, Ser. No. 80,664
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 S **17 Claims**



A yarn inspector has three detecting circuits, one for detecting major defects, one for detecting minor defects and one for detecting the number of defects per unit length. The sensitivity of each of the defect detecting circuits can be set by means of digitally reading manually operable disc-type switches. A photosensor responsive to yarn defects is connected to all three detecting circuits. After amplification of the signal from the photosensor, a selected value representing the prevailing noise level is subtracted from the amplified signal. The remainder, representing a defect signal without noise, is further amplified to provide an output signal which is used to indicate and record the defect and, if desired, stop the warper or other machine with which the yarn inspector is used. Controls are provided on the front panel for setting the sensitivity of the detecting circuits and also for setting the number of defects, the unit length and the speed of the yarn being inspected. A single meter is provided with a selector switch to permit checking the inspection during operation and also testing and calibrating the inspector when the yarn is stopped.

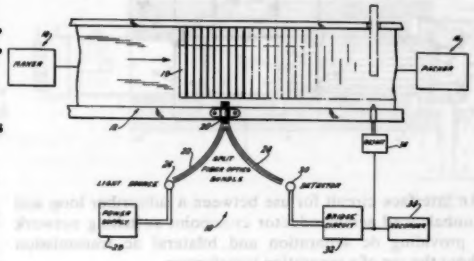
3,729,636

SYSTEM FOR DETECTING LOOSE TOBACCO AT CIGARETTE ENDS

Steve L. Merker, Louisville, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 3, 1971, Ser. No. 177,627
Int. Cl. G01n *15/08*
U.S. Cl. 250—223 R **6 Claims**

A system is provided for detecting loose ends of cigarettes either at the discharge end of a cigarette maker or filter tip attachment machine or at the entrance of a cigarette packaging machine. This system includes a probe in the form of a split fiber optics bundle located adjacent a conveyor or other transport means for cigarettes which travel along the conveyor with their axes substantially normal to the direction of travel of the conveyor. The fibers of the bundle are divided randomly and one branch extends to a light source and the other to a detector. In this fashion, light will be directed from the probe towards the tobacco end of the traveling cigarettes. The reflected light is transmitted through the other branch to the detector which is coupled with a bridge circuit for measuring



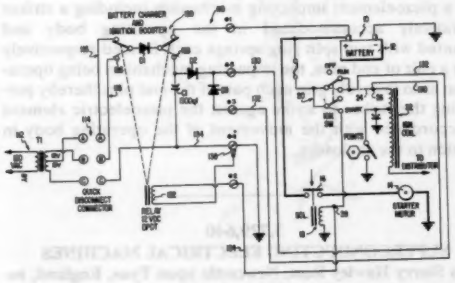
the level of intensity of the reflected light. This circuit will not respond to the higher intensity light level of an acceptable firmly packed cigarette end. However, the reflected light will be substantially reduced if the tobacco in the cigarette end is loose or cavitated. When a loose cigarette end is detected, either a memory circuit or wheel is actuated in order that the cigarette having the detected loose end will be eventually rejected by an ejection mechanism.

3,729,637

COMBINED BATTERY CHARGER AND AUTOMATIC IGNITION BOOSTER

Richard G. Gray, Long Island, N.Y., assignor to Magnetic Head Corporation, Hauppauage, N.Y.

Filed May 5, 1971, Ser. No. 140,464
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 BP **5 Claims**



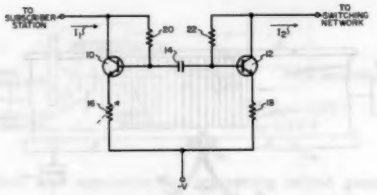
An accessory circuit arrangement for an internal combustion engine employing a D.C. battery source for the starter and ignition circuits which permits the alternate utilization of the same external A.C. source as a battery charger and an ignition booster.

3,729,638

SUBSCRIBER INTERFACE CIRCUIT FOR UNBALANCED SEMICONDUCTOR SWITCHING SYSTEM

Max S. Macrander, Warrenville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 9, 1971, Ser. No. 206,386
Int. Cl. H03k 17/60
U.S. Cl. 307—254 4 Claims



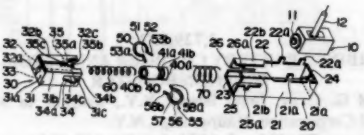
An interface circuit for use between a subscriber loop and an unbalanced semiconductor crosspoint switching network for providing dc separation and bilateral ac transmission without the use of a separation transformer.

3,729,639

PIEZOELECTRIC IGNITER

Yosiaki Heinouchi, Otokuni-gun, Kyoto-fu; Keizo Tabuchi, Kyoto-fu, and Tetsuo Tatsumi, Otokuni-gun, Kyoto-fu, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed March 27, 1972, Ser. No. 238,137
Claims priority, application Japan, April 2, 1971, 46/20523; Aug. 22, 1971, 46/64136
Int. Cl. H04r 17/00
U.S. Cl. 310—8.3 8 Claims



A piezoelectric igniter comprising a piezoelectric element, an enclosure fixedly accommodating the piezoelectric element, an operating body movable in relation to the enclosure and a piezoelement impacting mechanism including a striker operatively accommodated in the operating body and mounted with two split ring springs each formed respectively with a pair of end pins, the impacting mechanism being operable so as to inwardly grip each pair of the end pins thereby permitting the striker to strike against the piezoelectric element in accordance with the movement of the operating body in relation to the enclosure.

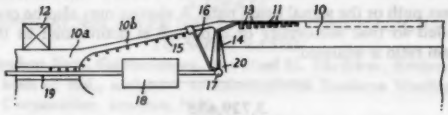
3,729,640

SUPERCONDUCTING ELECTRICAL MACHINES

John Sterry Hawley Ross, Newcastle upon Tyne, England, assignor to International Research & Development Company, Limited

Filed Feb. 16, 1971, Ser. No. 115,653
Int. Cl. H02k 9/00
U.S. Cl. 310—52 5 Claims

A synchronous electrical generator having a rotor with a superconducting winding and coolant ducts for the winding and for the end part of the rotor, liquid helium being supplied to the winding coolant ducts through a radial passage and the heat generated by centrifugal action on the liquid passing



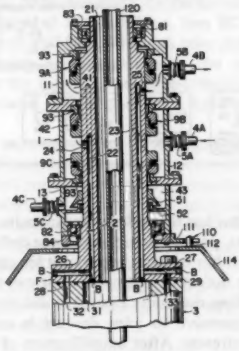
through the passage being conducted back to the radially inner end of the passage and dissipated in the liquid cooling the end part of the rotor.

3,729,641

COOLING LIQUID ADMITTING AND EXHAUSTING DEVICE FOR USE WITH LIQUID-COOLED ELECTRICAL ROTARY MACHINES

Hiroshi Sato, and Hisashi Toshima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed June 15, 1971, Ser. No. 153,265
Claims priority, application Japan, June 19, 1970, 45/52815
Int. Cl. H02k 9/00
U.S. Cl. 310—54 8 Claims



A device is provided for admitting the cooling liquid into the rotary member from the fixed member of a rotary machine or vice versa. A casing is disposed around a rotary shaft in such a manner that the cooling liquid admission and exhaust ports formed to open at the peripheral surface of the shaft may be enclosed in the casing, and sealing means are interposed between the shaft and casing to prevent the leakage of the cooling liquid and the mixture of the cooling liquid to be admitted and discharged. The casing is supported with bearing means disposed at the ends of the casing in such a manner that the casing may follow the fluctuation other than the rotation of the rotary shaft.

3,729,642

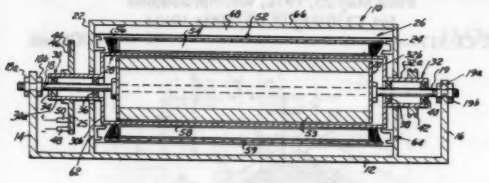
PLURAL STATOR DYNAMOELECTRIC MACHINE

Ernie B. Esters, 15915 Rutherford, Detroit, Mich.

Continuation-in-part of Ser. No. 12,963, Feb. 20, 1970, Pat. No. 3,602,749. This application Aug. 5, 1971, Ser. No. 169,260
Int. Cl. H02k 7/00
U.S. Cl. 310—112 14 Claims

A dynamoelectric machine having coaxial inner and outer cylindrical stators and a pair of end stators with each stator being provided with a plurality of magnetic flux producing permanent magnets. The rotor is of a cylindrical configuration

and is disposed in the magnetic gap between the inner and outer stators and the end stators and comprises a plurality of radially disposed coils, magnetic cores with windings and intermediate magnetic cores without windings disposed



therebetween. The journal and support structure for the rotor and stators is of a configuration to permit maximum rotor and stator interface surface alignment and to provide maximum efficiency from the dynamoelectric machine.

3,729,643

MERCURY VAPOR DISCHARGE LAMP WITH RADIATION PLANE IN ENVELOPE

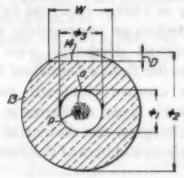
Kakuichiro Hosokoshi, Neyagawa-shi, Japan, assignor to Matsushita Electronics Corporation, Osaka, Japan

Filed March 29, 1971, Ser. No. 128,658

Claims priority, application Japan, April 3, 1970, 45/28735

Int. Cl. H01j *61/20, 61/33*

U.S. Cl. 313—184 **3 Claims**



Improvement of a mercury-vapor lamp, characterized by the provision of a radiation plane in the form of a flat portion on the outer wall of a substantially cylindrical envelope of a mercury-vapor lamp, said flat portion being formed parallel the axis of said envelope.

3,729,644

HELIX TRAVELING-WAVE TUBE

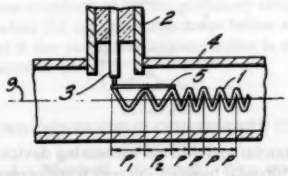
Tairoku Okazaki, Minato-ku, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Dec. 2, 1971, Ser. No. 204,218

Claims priority, application Japan, Dec. 4, 1970, 45/107266

Int. Cl. H01j *25/34*

U.S. Cl. 315—3.5 **6 Claims**



A helix travelling-wave tube comprises coupling devices for matching the impedance discontinuity between the helix and the input or output elements. The coupling device is provided with a conductor tape or rod near one end of the helix across at least one pitch of the helix.

3,729,645

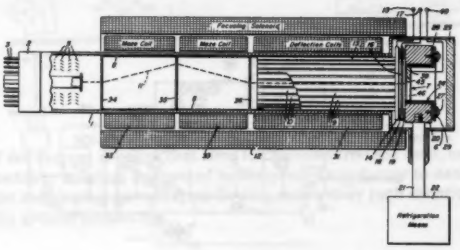
PHOTOCONDUCTIVE CAMERA TUBES AND METHODS OF MANUFACTURE

Rowland W. Redington, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 16, 1964, Ser. No. 418,920

Int. Cl. H01j *31/48*

U.S. Cl. 315—11 **8 Claims**



The present invention is directed to a very thin photoconductive camera tube target formed of extrinsic semiconductor material. The resulting target has an enhanced contrast and signal-to-noise ratio.

3,729,646

MAGNETRON TUNABLE BY PIEZO-ELECTRIC MEANS OVER A WIDE RANGE IN DISCRETE STEPS

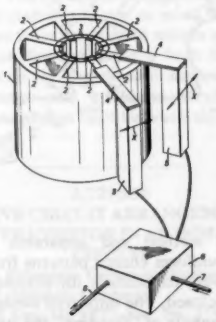
Alan Hugh Pickering, Springfield, Chelmsford, England, assignor to English Electric Valve Company Limited, London, England

Filed June 7, 1971, Ser. No. 150,292

Claims priority, application Great Britain, July 1, 1970, 31,939/70

Int. Cl. H01j *25/50*

U.S. Cl. 315—39.55 **8 Claims**

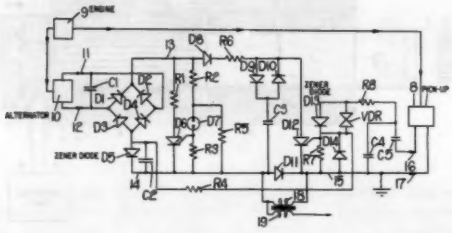


A tunable magnetron has, adjacent and spaced above each vane separating the cavities, an inductive tuner. Each inductive tuner is capable of being energized in order to occupy one of two pre-determined positions, each position corresponding with a different tuned frequency. The frequency changes produced by actuation of the different inductive tuners is arranged such that the frequency changes produced by each tuner vary in accordance with a binary relationship.

3,729,647
SPARK IGNITION SYSTEMS

David Mainprize, 37 Bearlane Close, near Tamworth, England

Filed May 10, 1971, Ser. No. 141,820
Claims priority, application Great Britain, May 21, 1970, 24,601/70
Int. Cl. H05b 37/02; F02p 1/00
U.S. Cl. 315—209 SC 13 Claims

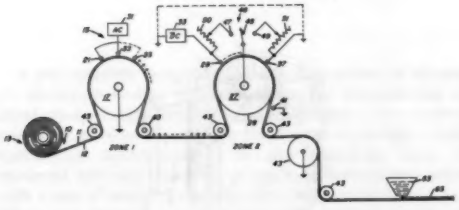


A spark ignition system for an internal combustion engine has a capacitor which is charged by an alternator through a rectifier. The capacitor is discharged at intervals to produce a spark, and voltage sensitive means is provided for short-circuiting the alternator output when a capacitor is charged to a predetermined level. Preferably the capacitor discharges through a thyristor, and means is provided for ensuring that the thyristor always turns off between cycles.

3,729,648
METHOD AND APPARATUS FOR TREATING A WEB

William C. Kerr, Middlesex, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,023
Int. Cl. B44d 1/12; H05f 3/00
U.S. Cl. 317—2 R 9 Claims

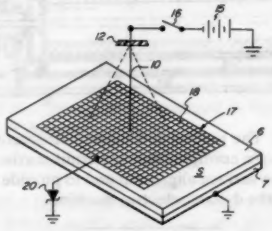


An improved method and apparatus for substantially eliminating non-uniform charge patterns from a surface of a corona-treated web, particularly for enhancing the surface's coatability, is disclosed. The improved method and apparatus employs the technique of "flooding" the surface with charge of one polarity from a first electrode so as to generally uniformly charge the surface, and thereafter removing the charge imparted to the surface by applying an equal but opposite charge from a second electrode. To ensure positive control between the amount of charge added to the surface and the amount removed, the invention proposes that the first and second electrodes be connected to a single source of DC power and that the web, when treated in accordance with the invention, be supported by an electrically conductive roller which is electrically isolated from ground.

3,729,649
CORONA CHARGING APPARATUS

Paul A. La Chappelle, Rochester, and Michael Mosehauer, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

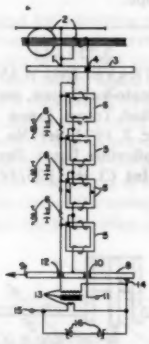
Filed May 25, 1972, Ser. No. 256,665
Int. Cl. G03g 15/02; H01t 19/04
U.S. Cl. 317—4 8 Claims



Corona charging apparatus for uniformly charging the surface of a dielectric layer supported on a grounded conductive backing. Such apparatus comprises a flexible corona discharge wire which is perpendicularly arranged, in a cantilever fashion, relative to the central portion of the surface being charged, the free end portion of such wire extending toward such surface. An electrically biased corona-control electrode, positioned between the free end of the corona discharge wire and the dielectric surface, serves to control the level and uniformity of charge received by the dielectric surface. When connected to an appropriate voltage source, the free end of the corona discharge wire becomes charge-emitting and, due to the field established between it and the combination of the control electrode and the conducting backing of the dielectric layer, oscillates in a random manner, thereby uniformly charging the dielectric surface to a level proportional to the electrical bias of the control electrode.

3,729,650
POTENTIAL-CURRENT TRANSFORMER DEVICE

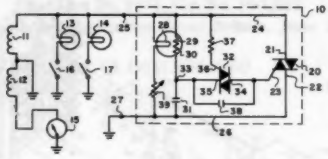
Ralph H. Cook, 2319 Galpin Avenue, Royal Oak, Mich.

Filed Feb. 7, 1972, Ser. No. 223,830
Int. Cl. H02h 7/04
U.S. Cl. 317—14 R 4 Claims

The line potential and current measuring device consists of a standard or toroidal bushing current transformer, a desired number of cascaded current transformers connected in parallel with a series of precision or non-precision type grading impedance devices such as resistors, capacitors or the like alone or in conjunction with a low-loss potential transformer. This supplies electrical outputs which make the device suitable for accurately checking line potential and current on an indicating or recording instrument.

3,729,651
VOLTAGE REGULATOR

David C. Fricker, Hurst, and Thomas F. Whittaker, Fort Worth, both of Tex., assignors to ECC Corporation, Euless, Tex.

Filed April 7, 1971, Ser. No. 131,981
Int. Cl. G05f 1/44
U.S. Cl. 317—16 13 Claims

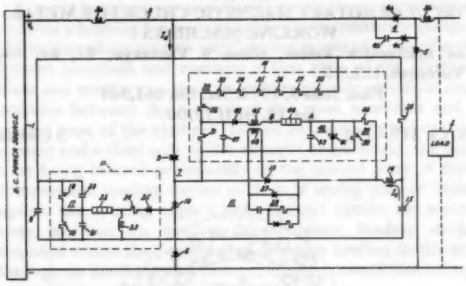


A semiconductor switching device is connected in shunt with an alternating voltage source to be regulated. A root-mean-square voltage sensing mechanism is coupled in shunt with the voltage source. A semiconductor breakover device is coupled between the voltage sensing mechanism and the gate electrode of the switching device for controlling the triggering of the switching device and thereby regulating the root-mean-square value of the voltage supplied to a load connected in shunt with the voltage source.

3,729,652
SOLID STATE SURGE SUPPRESSOR

John G. St. Clair, Folcroft, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed June 22, 1972, Ser. No. 265,288
Int. Cl. H02h 3/22
U.S. Cl. 317—16 8 Claims



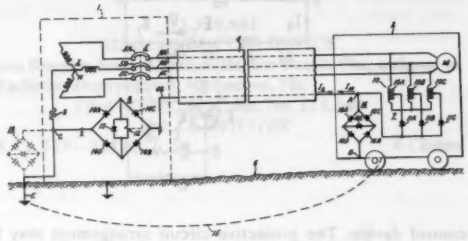
Solid-state circuitry for arresting surges on a D-C power line. The circuitry includes a non-linear resistor connected in series with a normally nonconductive thyristor across the power line. The thyristor is automatically triggered into conduction in response to a signal which is a function of the magnitude and the rate of rise of the surge. The thyristor is rendered non-conductive by an oscillatory circuit including a capacitor when the surge voltage drops below a first predetermined level if the voltage on the capacitor is above a second predetermined level.

3,729,653
GROUND CONDUCTOR CONTINUITY CHECKING CIRCUIT

Lawrence L. Mankoff, Broomall, Pa., and Thomas S. Spinanger, Haddonfield, N.J., assignors to General Electric Company, Philadelphia, Pa.

Filed Nov. 8, 1971, Ser. No. 196,287
Int. Cl. H02h 1/02
U.S. Cl. 317—18 C 6 Claims

In a fail-safe ground conductor continuity monitoring circuit, including means for inserting a low-level monitoring current into a ground conductor and receiver means for sensing if the level of current in the ground conductor is below a predetermined level, and for tripping a system circuit breaker

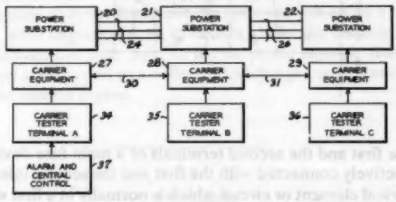


if the current is below that level for a predetermined time, impedance means is connected to the ground conductor to deter the monitoring current from flowing into a stray path shunting the ground conductor.

3,729,654
DIGITAL AUTOMATIC TRANSMITTER-RECEIVER TESTER

Dewey A. Yeager, Stillwater, Okla., assignor to Quadall Company, Inc., Tonkawa, Okla.

Filed Aug. 2, 1971, Ser. No. 168,327
Int. Cl. H02h 3/30
U.S. Cl. 317—28 R 8 Claims



In a high voltage transmission line system having carrier-current directional relay means connected therewith terminal circuit means are connected with the carrier-current system at remote locations. The carrier-current testing means includes a master or control station and one or more slave terminal circuit means remote from the control station and responsive to the control station for indicating a fault in carrier-current system. The circuit of the control station is actuated at predetermined times and an alarm means is tripped in response to a transmission fault between any two carrier-current stations tested.

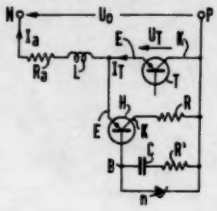
3,729,655
PROTECTIVE CIRCUIT ARRANGEMENT FOR A SWITCHING TRANSISTOR IN AN INDUCTIVE LOAD CIRCUIT

Werner Gratzke, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,392
Claims priority, application Germany, May 12, 1972, P 22 23 376.7
Int. Cl. H02h 7/14
U.S. Cl. 317—33 R 14 Claims

A protective circuit arrangement for a switching transistor in an inductive load circuit has a series circuit consisting of a resistor and a controlled auxiliary valve shunted across the collector-emitter path of the switching transistor to take over the load current of the switching transistor when it is switched off. The control electrode of the auxiliary valve is controlled

by a control device which consists of a capacitor and a charging resistor in series. A Zener diode may be shunted across the



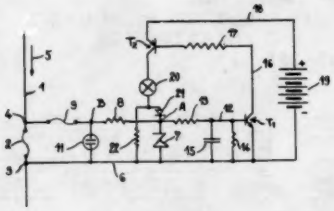
control device. The protective circuit arrangement may be used particularly in an inverter which has a plurality of switching transistors.

3,729,656

INDICATOR CIRCUITS FOR ELECTRIC FUSE DEVICES

Jean Claude Luquain, Lyon, France, assignor to Societe Lucien Ferraz & Cie, Lyon, France

Filed June 20, 1972, Ser. No. 264,596
Int. Cl. G08b *21/00*
U.S. Cl. 317—40 A **4 Claims**



The first and the second terminals of a main fuse device are respectively connected with the first and the second inlet of an electrical element or circuit which is normally in a first state as long as the voltage across the said terminals is negligible, but is brought to a second state by the voltage which appears across same when the main fuse device has blown, a voltage reducing resistor being inserted between said first terminal and said first inlet. In order to protect this resistor an auxiliary fuse device is disposed between same and said first terminal, while the point of junction between this auxiliary fuse and the said resistor is connected with the second terminal of the main fuse device by a threshold element such as a neon bulb. When the main fuse device blows, the voltage across the neon bulb reaches the threshold thereof and a heavy current flows through the said bulb and through the auxiliary fuse device which blows in turn. The indicator circuit may be provided with feed back means to maintain it in its second state after the blowing of the auxiliary fuse device.

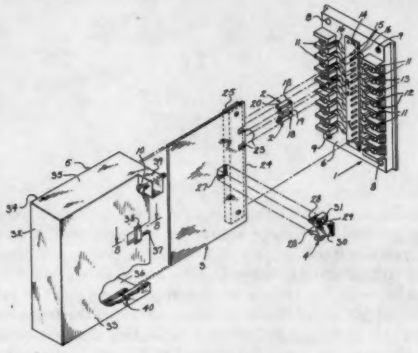
3,729,657

CODED CIRCUIT MOUNTING DEVICE WITH COVER

John E. Callan, Milwaukee, and Lawrence F. Freitag, Bayside, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed July 15, 1971, Ser. No. 162,880
Int. Cl. H05k *5/03*
U.S. Cl. 317—101 DH **8 Claims**

A mounting enclusure for a plug-in circuit card having a cover into which the card is inserted for retention therein, and a base upon which the card and cover are detachably mounted. The base has a number of electrical connector pins that mate with a female connector on the card and a plurality of cavities each formed to accept one end of a circuit card ke, with the opposite end of the key protruding outward from the base. The circuit card has a notch, or notches, in one edge that coincides with circuit card keys protruding from the base when the card and base are connected together. By inserting a key or keys in particular ones of the key cavities, the base is coded to receive only a circuit card with mating notches. The



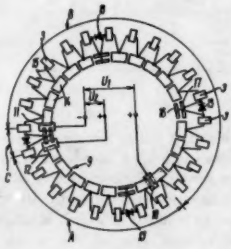
electrical circuit on the card is identified by its edge notching, and thus key location in a base identified the card and circuit which is to be attached to the base. Mounted on the circuit card is a latch that engages the cover to semi-permanently affix the circuit card in the cover when the card is inserted therein.

3,729,658

CIRCULAR ROTARY MAGNETIC CHUCK FOR METAL-WORKING MACHINES

Ivan Andreevich Voitov, ulitsa 9 Yanvarya, 91, kv. 65, Voronezh, U.S.S.R.

Filed June 9, 1972, Ser. No. 261,541
Int. Cl. H01f *13/00*
U.S. Cl. 317—157.5 **3 Claims**



In the chuck body adapted to rotate on the base, there are located electromagnets which, when the chuck rotates, get successively connected by the contact system to working voltage within the workpiece machining zone and to demagnetizing voltage within the workpiece unloading zone.

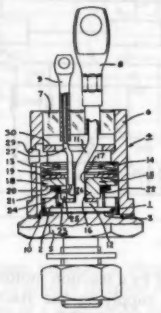
The chuck contact system comprises the ring commutator held on the chuck body and current-carrying brushes adapted to interact therewith and fixed to the chuck bed at the boundaries of the zone, whereas cut into the circuit of the electromagnets are semiconductor diodes capable of admitting current to pass therethrough within the workpiece machining zone and not admitting it to flow within the workpiece loading zone.

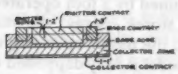
3,729,659

MULTI-TERMINAL SEMICONDUCTOR DEVICES HAVING PRESSURE CONTACTS FOR MAIN AND GATE ELECTRODES

Roger Bennett, and Anthony Peter Clelford, both of London, England, assignors to Westinghouse Brake English Electric Semi-Conductors Limited, London, England

Continuation of Ser. No. 825,582, May 19, 1969, abandoned.
Filed Oct. 29, 1971, Ser. No. 193,883
Claims priority, application Great Britain, June 18, 1968, 28898/68
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 16 Claims





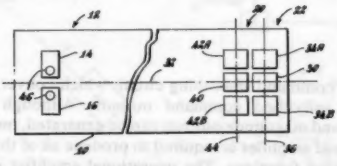
A multi-terminal semiconductor device is provided which includes a housing for encapsulating a semiconductor element and having a base portion which serves as one of a pair of main current terminals and contacts a first zone of the element. Main and auxiliary contact assemblies provide electrical connections between the second of the main terminals and a second zone of the element, and an auxiliary control current contact and a third zone of the element, respectively, the third zone being located peripherally of the second zone. A main compression loading device such as a spring washer acting against the housing urges a main contact against the second zone whereas an auxiliary compression loading device disposed within the periphery of the main loading device acts through an insulator and between the two assemblies to urge an auxiliary contact against the third zone.

3,729,660

IC DEVICE ARRANGED TO MINIMIZE THERMAL FEEDBACK EFFECTS

Modesto A. Maidique, Woburn, Mass., assignor to Nova Devices, Inc., Wilmington, Mass.

Filed Nov. 16, 1970, Ser. No. 89,980
Int. Cl. H01l 15/00
U.S. Cl. 317—235 R 8 Claims



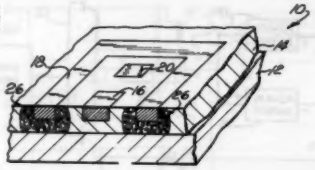
An integrated circuit device having cascaded stages, wherein at least one relatively high-powered stage comprises two balanced sections at least one of which is divided into two parallel-operated sub-sections located symmetrically about a line passing through the effective center of an earlier, lowered-powered stage, thereby to minimize any effects of heat flow from the high-powered stage to the earlier stage.

3,729,661

SEMICONDUCTOR DEVICE

James Douglas Beasom, Indian Harbor Beach, Fla., assignor to Radiation Incorporated, Melbourne, Fla.

Filed Feb. 11, 1971, Ser. No. 114,549
Int. Cl. H01l 11/00
U.S. Cl. 317—235 R 6 Claims



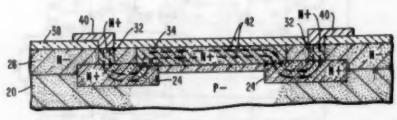
An improved semiconductor device of either PNP or NPN type is provided wherein a base layer of a first conductivity type is epitaxially grown so as to overlie a substrate layer. Emitter and collector regions of semiconductor material of a second conductivity type are diffused into the upper surface of the base layer. The substrate layer is doped to be of the second type conductivity and the thickness of the base layer is such that application of a reverse bias voltage across the collector base regions above a predetermined amount will cause a sufficiently wide depletion area to extend about the collector region through the base layer to the substrate layer so that the substrate layer serves as a collector for charge carriers emitted from the emitter region.

3,729,662

SEMICONDUCTOR RESISTOR

Jack L. Langdon, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 26, 1971, Ser. No. 128,427
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 5 Claims



A diffused resistor structure and method for fabrication which produces the resistor electrical contacts below the surface of the semiconductor device. The resistor structure includes a resistor region of a first conductivity type surrounded at the surface of the region by a region of a second conductivity. At least two spaced semiconductor electrical contacts of a first conductivity are made to the resistor region. The contacts are below the surface of the resistor structure. Electrical contacts are provided on the surface of the structure spaced from the resistor region and electrically connected to the two spaced semiconductor contacts below the surface of the resistor structure.

3,729,663

ACTUATOR SYSTEMS EMPLOYING ENERGY RECOVERY TECHNIQUES

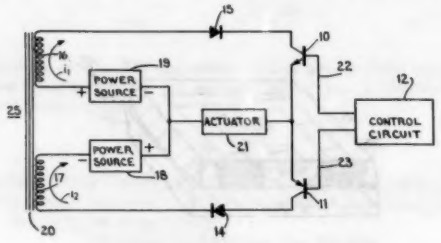
Timothy John Stevenson, Windsor, and Gordon George Scarrott, Welwyn Garden City, both of England, assignors to International Computers Limited, London, England

Filed Aug. 2, 1971, Ser. No. 168,102

Claims priority, application Great Britain, Sept. 4, 1970, 42,368/74

Int. Cl. H02k 41/02

U.S. Cl. 318—135 5 Claims



A system for accelerating and decelerating a movable element of an actuator includes an inductive energy storage means, a circuit for producing a predetermined current condition in the inductor which holds the element in a balanced position and stores energy in the storage means, and switch means for discharging the storage means through the actuator to accelerate the element. The back E.M.F. developed by the motion of the element produces a current which opposes the accelerating current and thus applies to the energy store kinetic energy developed by the movement of the element.

3,729,664

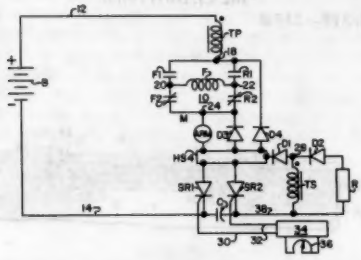
HEAT SINK MOUNTING FOR THE POWER SEMICONDUCTOR IN A SOLID STATE D.C. MOTOR CONTROL CIRCUIT

Robert C. Montross, Mequon, Wis., assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 6, 1971, Ser. No. 186,843

Int. Cl. H02p 5/16

U.S. Cl. 318—139 10 Claims



A control circuit for a battery powered vehicle. The circuit includes a pair of silicon controlled rectifiers which are connected between the battery and the motor and commutated to cause the motor to be energized with pulses of current, a diode which conducts currents induced in the motor by the current pulses, a diode which conducts currents generated by the motor when the direction of current flow through the field of the motor is reversed and the motor acts as a generator and a diode which is connected in a charging circuit for a capacitor which causes the rectifiers to commutate and a heat sink which provides a common mounting and electrical junction for the pair of rectifiers and the three diodes.

3,729,665

DIRECT SUPPLY CONTROL DEVICE FOR A TRACTION MOTOR OF VEHICLES, PARTICULARLY FOR ELECTRIC LIFTING TRUCKS

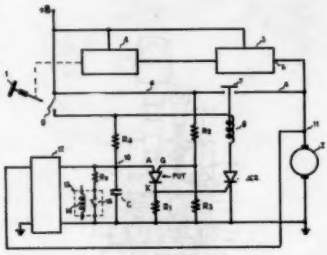
Vito Tateo, Milan, and Guido Galli, Bastiglia, both of Italy, assignors to Fabrica Italian Magneti Marelli S.P.A., Milan, Italy

Filed Nov. 2, 1971, Ser. No. 194,965

Claims priority, application Italy, Nov. 17, 1970, 31831 A/70

Int. Cl. H02p 5/16

U.S. Cl. 318—139 5 Claims



In a vehicle operated by a traction motor, a circuit for controlling the electrical supply to the traction motor in accordance with the speed desired by the operator, which is preferably determined by a foot operated pedal. An electrical storage member stores energy, the magnitude of which is directly related to the motor operating speed at any given instant. When the pedal is fully depressed for maximum traction the storage member operates to delay the energization of a programmed unijunction device at a rate which is inversely proportional to control parameters of the motor so as to provide a substantially gradual transition to the condition of maximum traction.

3,729,666

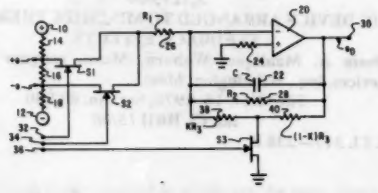
DC COMMAND SMOOTHING CIRCUIT

William J. Kelly, Sauquoit, N.Y., assignor to Cogar Corporation, Wappingers Falls, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,930

Int. Cl. G05b 11/42

U.S. Cl. 318—458 14 Claims



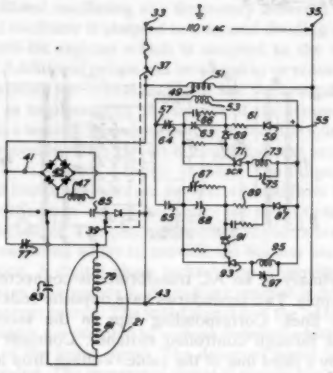
A DC command smoothing circuit which converts step inputs to smoothed command outputs. Although different polarity and magnitude outputs can be generated, only a single operational amplifier is required to produce all of the necessary transition functions. The operational amplifier includes a capacitor in parallel with a fixed resistor and at least one pair of series connected resistors. The junction of the series resistors can be selectively shorted to ground to change the gain of the amplifier.

3,729,667

PRECISION LEVEL MEASUREMENT AND CONTROL APPARATUS

William S. Taylor, Drexel Hill, Pa., assignor to FIC Industries, Inc.

Filed June 17, 1971, Ser. No. 153,957
Int. Cl. G05d 9/00
U.S. Cl. 318—482 10 Claims



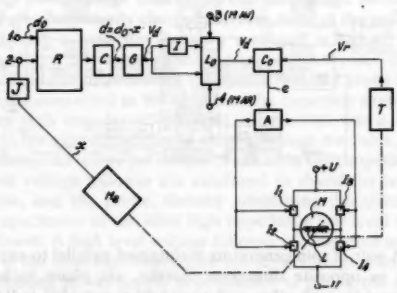
The present system includes a plummet or weight which moves in response to gravity to come to rest on the top of the material, in the case of a granular or particulate solid, whose level is being measured, or to determine the upper surface, in the case of a liquid, whose level is being monitored. The plummet is connected to a support means, such as a perforated tape, which in turn is coupled to drive a counter device. When the plummet stops moving downward the level can be read as a function of shaft position such as by a counter device, a shaft motion transmitter, pulser, or shaft encoder. In addition the support means is coupled to a take-up means which lifts the plummet upward in accordance with a periodic energization of the take-up means. The energization of the take-up means is controlled by a logic circuit which determines the period for the take-up action and the gravity probe.

3,729,668

APARATUS FOR CONTROLLING THE DISPLACEMENT OF AN OBJECT BETWEEN ANY TWO POINTS

Yves-Jean Francois Brette, Sevres, France, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed June 24, 1971, Ser. No. 156,261
Claims priority, application France, June 26, 1970, 7023798
Int. Cl. G05b 13/00
U.S. Cl. 318—561 8 Claims



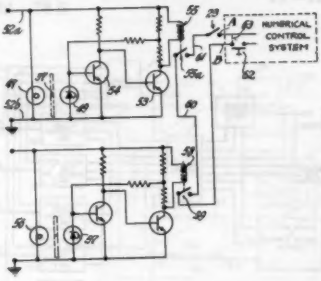
Apparatus for displacing an object between any two points along a predetermined path, according to a given law of motion, wherein a signal representing the actual speed of said object is compared with a reference speed signal derived according to the law of motion, and from said comparison an error signal is generated to control the speed of a motor driving such object.

3,729,669

FINE-COARSE POSITION INDICATING SYSTEM

Charles A. Whitney, Canton; James P. Somerset, Wethersfield, and Randal B. Hathway, Thomaston, all of Conn., assignors to The Superior Electric Company, Bristol, Conn.

Filed Oct. 29, 1970, Ser. No. 84,977
Int. Cl. G05b 11/18
U.S. Cl. 318—594 11 Claims



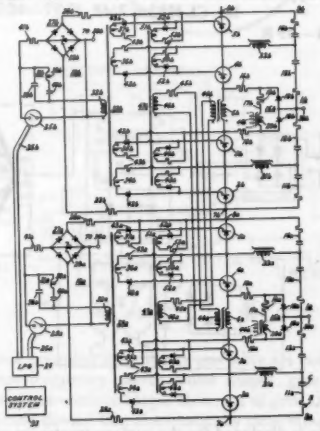
A system for providing a signal that a worktable is at a location when the worktable is driven along two coordinants by a pair of motors by concurrently sensing the actual worktable position and one rotational position of each motor. Relatively non-precise switch means are used for sensing the location of the worktable within an area that is less than the movement produced by one revolution while a shaft decoder connected to each motor senses the rotational position of the motor with simultaneous indications from the three sensing sources enabling the precise determination of the worktable position. The system may be used to prevent further automatic movement of the member when the motors are controlled by a numerical controlled system.

3,729,670

REDUNDANT TRIGGERING MEANS FOR HVDC VALVE

Clyde G. Dewey, Drexel Hill, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Feb. 12, 1971, Ser. No. 114,948
Int. Cl. H02m 1/18; H03k 17/00
U.S. Cl. 321—11 3 Claims



A redundant triggering scheme is disclosed for an electric valve composed of switching matrices each comprising plural

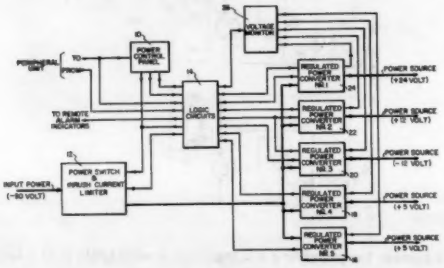
serially connected thyristors and a serially connected current limiting inductor. Means are provided coupled to said inductors for providing redundant trigger signals to a matrices' thyristors in response to the initiation of current flow through on inductors of another matrix.

3,729,671

POWER CONTROL AND SUPERVISORY SYSTEM

Thomas H. Jeffery, Oak Park, and Karl H. Kuster, Glendale Heights, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed March 22, 1972, Ser. No. 236,729
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **7 Claims**



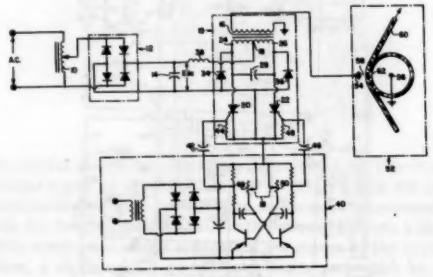
There is herein disclosed an electrical power control and supervisory system for monitoring the outputs of a plurality of regulated power converters and generating error signals which are fed back to control the converter outputs and provide power on/off control signals to properly sequence the application and removal of power to solid state logic circuitry.

3,729,672

APPARATUS FOR FILM TREATING

Louis A. Rosenthal, Highland Park, and Donald A. Davis, Somerville, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 862,307, Sept. 30, 1969, abandoned, and Ser. No. 862,412, Sept. 30, 1969, abandoned.
This application Jan. 14, 1971, Ser. No. 106,375
Int. Cl. H02m *7/48*
U.S. Cl. 321—45 R **3 Claims**



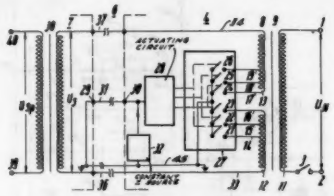
Apparatus is disclosed for the surface treatment of a plastic body by exposure to a high intensity voltage accompanied by corona discharge employing a solid state sonic frequency pulse generator.

3,729,673

CONSTANT VOLTAGE IN VARIED LENGTH CABLES

Hans-Dieter Schneider, Gross-Gerau, Germany, assignor to Fernseh GmbH Darmstadt, Darmstadt, Germany

Filed Sept. 8, 1971, Ser. No. 178,565
Claims priority, application Germany, Sept. 8, 1970, P 20 44 329.2
Int. Cl. G05f *1/20*
U.S. Cl. 323—43.5 S **7 Claims**



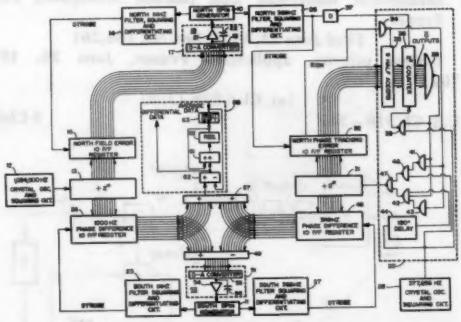
The primary of an AC transformer is connected across a power supply. Two secondaries have opposite ends connected to cable lines. Corresponding taps in the secondary are grounded through controlled switches. Constant current is carried by a third line of the cable. Voltage drop in the third line varies by length. Mutually exclusive threshold switches sense the voltage drop and apply power through a selected impedance transfer to operate one corresponding control switch on each secondary to thereby ground selected points on each secondary, thereby controlling the AC output voltage from the secondaries. Thus the proper AC voltage is applied to the cable according to its length. When no cable is present, no power is available at its connections.

3,729,674

DIGITAL NUCLEAR GYROSCOPIC INSTRUMENTATION AND DIGITAL PHASE LOCKED LOOP THEREFOR

John R. Lowdenslager, Chappaqua, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,263
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **5 Claims**



A pair of spin generators maintained parallel to each other, but in opposite directions thereto, are phase locked with respect to each other and an output is provided indicative of the inertial reference. Both spin generators include different sets of nuclei which resonate at two different distinct frequencies. A first crystal oscillator is initially phase locked with

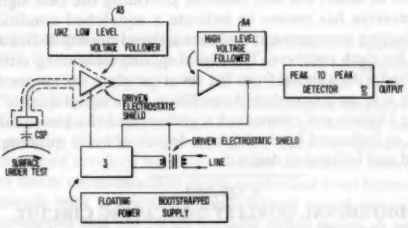
respect to one of the spin generators through the use of a dividing circuit, a multi-bit register, and a proportional field control for that spin generator. Similarly, the other spin generator is coupled to strobe a second multi-bit register which is coupled to the dividing circuit so as to provide a phase difference signal from the output of the second shift register, which phase difference signal is indicative of the difference in phase between the two spin generators. A second crystal oscillator oscillating at a frequency different from the first crystal oscillator is coupled to a second dividing circuit to a third multi-bit register which is coupled to the first spin generator. Additional pulses can be added to or removed from the path between the crystal oscillator and the second dividing circuit, so as to phase-lock the output of the second divider circuit with a second frequency output of the first spin generator. The second dividing circuit is coupled to the second spin generator by means of a fourth register. The outputs of the second and fourth registers are subtracted, one from the other through a difference circuit to control the south field proportional field control. The phase difference registers are also fed through a summing adder to provide the nuclear inertial output reference. A digital phase locked loop is provided for an input signal at a frequency f_s. An n-stage counter is driven with a $2^n xf_s$ coherent source. The input signal and the output of the n-stage counter are coupled to a phase detector which samples the phase of the input signal. The detected signal is periodically integrated. The integrated signal is coupled to an analog to digital converter whose output controls a pulse advance or retard means which is serially coupled between the coherent source and the counter.

3,729,675

HIGH LEVEL NON-CONTACTING DYNAMIC VOLTAGE FOLLOWER FOR VOLTAGE MEASUREMENT OF ELECTROSTATICALLY CHARGED SURFACES

Robert E. Vosteen, 315 W. Center St., Medina, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,075
Int. Cl. G01r *31/02*
U.S. Cl. 324—72 **10 Claims**



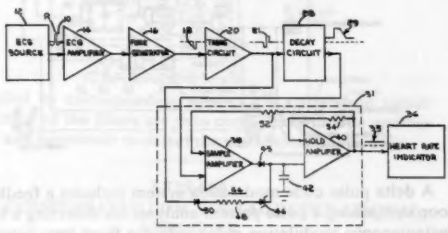
A wide band voltage follower circuit for voltage measurement of electrostatically charged surfaces through the use of a probe having a capacitor detector arranged in spaced and non-contacting manner with the surface under measurement to detect the unknown surface voltage thereof, the probe having a cable connected to the output of the capacitor detector. An ultra high impedance low level voltage follower is connected to the capacitor detector output through the cable, and shield means driven by the output of the ultra high impedance low level voltage follower are employed to shield the latter, the cable, and the probe, thereby minimizing the effective input capacitance of the ultra high impedance low level voltage follower. A high level voltage follower is connected to the output of the ultra high impedance low level voltage follower, and a floating power supply is connected to power the ultra high impedance low level voltage follower. The power supply is bootstrapped with the latter by the high level voltage follower through the connection of the common line of the floating power supply to the output of the high level voltage follower. The output of the high level voltage follower is connected to a peak-to-peak detector to derive an output voltage whose D.C. voltage is equal to the D.C. voltage of the surface under measurement.

3,729,676

RATEMETER

James R. Currie, and Ralph R. Kissell, both of Huntsville, Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed July 13, 1971, Ser. No. 162,101
Int. Cl. G01r *23/02*; **A61b** *5/04*
U.S. Cl. 324—78 E **4 Claims**



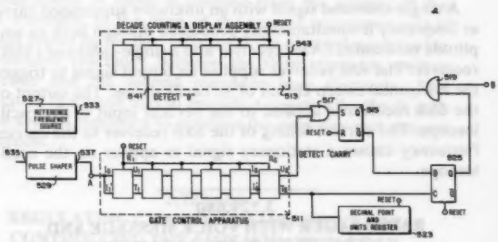
An instantaneous reading tachometer in which reoccurring events to be measured in rate, trigger a three-state timing generator in which the first two states are of fixed duration and the third state is of variable duration. An electrical decay circuit is set to a reference level by the second state and the third state causes this reference level to decay until the re-occurrence of an event. This triggers a new first state which in turn triggers a sample and hold circuit to hold the decayed level. The decayed level is amplified and provided as an output indicative of the instantaneous rate of occurrence of the last two successive events.

3,729,677

GATE CONTROL APPARATUS FOR SETTING THE INPUT SIGNAL COUNTING INTERVAL

Ian T. Band, Los Altos, Calif., assignor to Hewlett—Packard Company, Palo Alto, Calif

This application May 22, 1972, Ser. No. 255,667
Int. Cl. G01r *23/02*
U.S. Cl. 324—78 D **3 Claims**

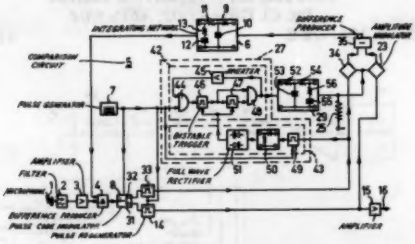


A decade counting and display assembly are combined with a reference frequency source, pulse shaper, gate control apparatus and conventional logic elements to provide a frequency measuring device that automatically determines a time interval during which the frequency of an input signal is counted. The same components are used to provide a multiperiod averaging device that automatically determines a number of periods an input signal is to be averaged.

3,729,678
PCM SYSTEM INCLUDING A PULSE PATTERN ANALYZER

Johannes Wilhelmus Glasbergen, Hilversum; Johannes Anton Greefkes, Emmasingel, Eindhoven; Frank de Jager, Emmasingel, Eindhoven, and Adrianus Wilhelmus Maria van den Enden, Emmasingel, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 808,086, March 18, 1969, abandoned. This application July 20, 1971, Ser. No. 164,479
Int. Cl. H04b *1/100*
U.S. Cl. 325—38 A **62 Claims**

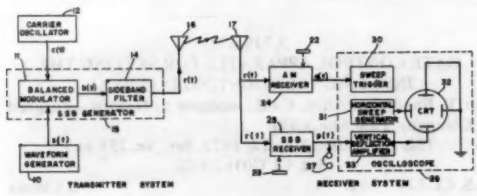


A delta pulse code modulation system includes a feedback loop comprising a pulse pattern analyzer for detecting a large instantaneous modulation index within a fixed time interval. The system exhibits a wide range of modulation and suppresses whistling and interference tones at low pulse rates.

3,729,679
SUPPRESSED CARRIER SINGLE-SIDEBAND SIGNAL DETECTION

Lucius B. Day, Jr., Warminster, Pa., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 30, 1971, Ser. No. 175,895
Int. Cl. H04b *1/68*
U.S. Cl. 325—49 **6 Claims**



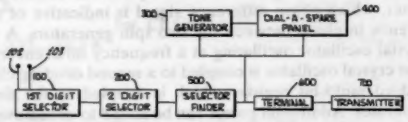
A single-sideband signal with an unknown suppressed carrier frequency is simultaneously processed through both an amplitude modulated (AM) receiver and a single-sideband (SSB) receiver. The AM receiver supplies an output signal to trigger the horizontal sweep circuit of an oscilloscope. The output of the SSB receiver is applied to the vertical input of the oscilloscope. The correct tuning of the SSB receiver to the carrier frequency causes a stationary signal to appear on the oscilloscope.

3,729,680
RADIO PAGER WITH VOICE MESSAGE AND SUBSTITUTE PAGING NUMBERS

Ramsey H. McDonald, 1046 S. 23rd Street, Richmond, Ind.

Filed March 29, 1971, Ser. No. 129,023
Int. Cl. H04b *1/00*
U.S. Cl. 325—55 **7 Claims**

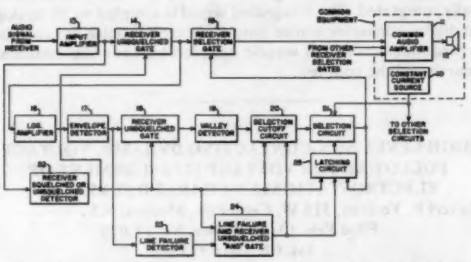
A paging system operably connecting remote paging receivers with an incoming call and having substitute paging numbers assignable to the remote paging receiver. A first digit selector connects the incoming call to a two digit selector after the appropriate fifth digit of a seven digit number has been inserted into the first digit selector. The sixth and seventh digits of the seven incoming signal are then routed to the two digit selector which is connected to tone generators which produce pairs of tones assigned to the sixth and seventh digits. The pair of tones is routed through a dial-a-spare panel which is operable to substitute a second pair of preselected tones for the first pair of tones. A selector finder is connected to the two digit selector and when transmitter time is available connects the incoming trunk lines of the first digit selector to the transmitter via a terminal assembly.



3,729,681
RECEIVER SELECTING ARRANGEMENT

James H. Elder, Brookneal, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 2, 1971, Ser. No. 168,163
Int. Cl. H04b *1/10*
U.S. Cl. 325—304 **6 Claims**

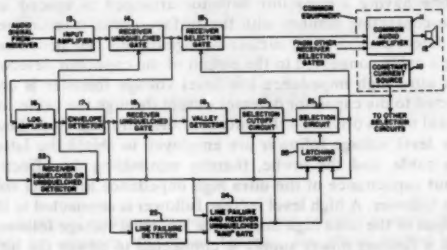


In a system having two or more separate radio receivers that can receive signals from a radio transmitter, an arrangement is provided to select the one receiver providing the best signal. Each receiver has means to indicate a squelched condition. The selecting arrangement includes a signal quality indicating circuit for each receiver. The signal quality indicating circuit is supplied with a signal from the receiver when the respective receiver is in an unsquelched condition. The signal quality indicating circuits are connected together, and the best quality signals, as indicated by the highest degree of noise quieting, is selected and utilized as desired.

3,729,682
AUDIO SIGNAL QUALITY INDICATING CIRCUIT

James H. Elder, Brookneal, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Aug. 2, 1971, Ser. No. 168,167
Int. Cl. H04b *1/16, 7/08*
U.S. Cl. 325—304 **4 Claims**



In a system for selecting one of a plurality of radio receivers, a circuit is provided for each receiver to indicate the quality of the audio signal provided by each receiver. The circuit uses a

logarithmic amplifier that has a gain which varies inversely with the received audio signal amplitude. The logarithmically amplified audio signal is applied to an envelope detector which provides an envelope signal of one polarity of the instantaneous audio signal amplitudes. The envelope signal is applied to a valley detector which provides a direct current voltage proportional to the lowest voltage value of the envelope signal, and hence indicative of the noise level between audible sounds. The outputs of all valley detectors in the system are compared, and the receiver providing the lowest valley detector voltage (an indication of the highest quality audio signal) is selected to provide the audio signal utilized at some common location.

3,729,683

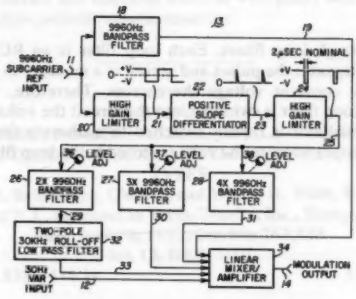
VOR 9960 HZ HARMONIC GENERATOR

William R. Hemme, Fairmont, Minn., assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Sept. 3, 1971, Ser. No. 177,716

Int. Cl. H03b *21/02*

U.S. Cl. 328—16 **6 Claims**



A controlled harmonic generation technique is applied to the 9960 Hz subcarrier signal related to VOR navigation by means separably applying a 30 Hz variable phase test signal and a 9,960 Hz subcarrier reference phase signal employed in the VOR navigation system to a harmonic generating means which acts on the 9,960 Hz subcarrier alone by generating predetermined levels of harmonics of the subcarrier with subsequent linear recombination of the controlled level harmonic components with a 9,960 Hz fundamental signal devoid of such harmonics and the 30 Hz variable phase signal. A selectively controlled composite modulation signal which simulates the modulation from actual VOR ground transmitting stations is thus provided.

3,729,684

DATA DEMODULATOR EMPLOYING MULTIPLE CORRELATIONS AND FILTERS

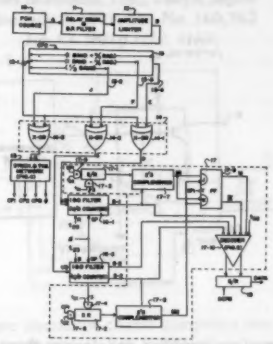
Donald G. Shuda, Chelsford, Mass., assignor to Sanders Associates, Inc., Nashua, N.Y.

Filed July 1, 1971, Ser. No. 158,844

Int. Cl. H04l *27/22*

U.S. Cl. 329—104 **5 Claims**

A demodulator useful for demodulating multi-phase differentially coherent phase shift keyed (PSK) signals. In the four phase case, a pair of correlators operate upon the identity and non-identity of the PSK signal and two replicas of itself derived from the preceding baud or frame interval to produce first and second correlation signals. The first and second correlation signals are then filtered by means of first and second digital counter type filters with the direction of counting being



controlled by corresponding ones of the correlation signal. The output of the filters are then compared with one another in sign and magnitude to detect the modulating information.

3,729,685

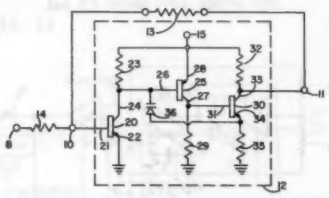
SELF-COMPENSATED LOW VOLTAGE OPERATIONAL AMPLIFIER

Donald L. Linder, Elmhurst, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 28, 1971, Ser. No. 110,427

Int. Cl. H03f *3/18, 1/36*

U.S. Cl. 330—17 **9 Claims**



A self-compensated low voltage amplifier is provided having first, second and third transistors direct current coupled together. The first and third transistors are of a first conductivity type and the second transistor is of an opposite conductivity type. A source of supply voltage is coupled to the transistors causing them to develop operative bias voltages at the electrodes. A diode is coupled from the emitter of the third transistor to the base of the second transistors and is reverse biased by the bias voltages at the electrodes to provide a capacitive reactance between the third transistor emitter electrode and the second transistor base electrode. This capacitive reactance acts to provide a negative feedback path to the second transistor to stabilize the amplifier and prevent oscillation.

3,729,686

REGULATING CIRCUIT ARRANGEMENT FOR CONTROLLING THE AMPLIFICATION OF AN AMPLIFIER

Konrad-Johann Kellermann, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 29, 1970, Ser. No. 85,120

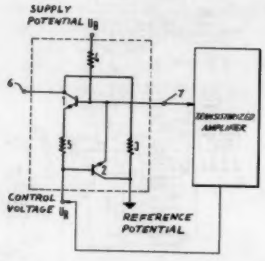
Claims priority, application Germany, Nov. 17, 1969, P 19 57 731.2

Int. Cl. H03g *3/30*

U.S. Cl. 330—29 **6 Claims**

A voltage divider has a controllable series impedance comprising a series-connected transistor and a controllable quadrature axis impedance comprising a parallel-connected

transistor connected in phase opposition to the series-connected transistor. The voltage divider dynamically divides the



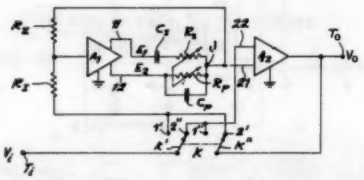
input voltage of an amplifier and derives therefrom a control voltage for controlling the amplifier.

3,729,687

SYSTEM FOR SELECTIVE FREQUENCY AMPLIFICATION OR ATTENUATION

Antonio Orlandini, and Massimo Pazzaglia, both of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milano, Italy

Filed May 10, 1971, Ser. No. 141,835
Claims priority, application Italy, May 8, 1970, 24305 A/70
Int. Cl. H03f 1/34
U.S. Cl. 330—51 **2 Claims**



Two signal generators of identical frequency and opposite phase, constituted by internal circuits of an amplifier with two mutually phase-reversed outputs, from two adjoining arms of a bridge network whose other two arms are a series R/C circuit and a parallel R/C circuit, respectively. The output diagonal of the bridge is defined by the junction of the two R/C circuits and by the grounded input terminal of the amplifier; the signal developed across this output diagonal disappears — i.e., the bridge is balanced — for any frequency bearing a predetermined relationship with the impedances of these circuits. Depending on whether the bridge network is inserted in the forward path or in the negative-feedback loop of another amplifier, frequencies determined by the adjustment of these impedances can be selectively attenuated or boosted.

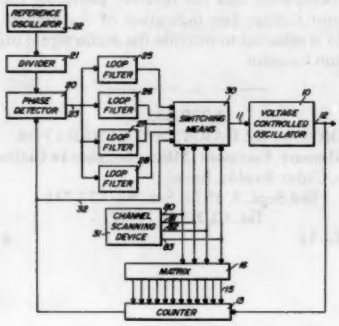
3,729,688

OSCILLATOR WITH SWITCHABLE FILTER CONTROL VOLTAGE INPUT FOR RAPIDLY SWITCHING TO DISCRETE FREQUENCY OUTPUTS

Frank J. Cerny, Jr., N. Riverside, and Donald L. Linder, Elmhurst, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 15, 1971, Ser. No. 208,349
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A **7 Claims**

A voltage controlled oscillator controllable to discrete frequency outputs, which outputs are applied to a phase detector through divider circuits and compared to a reference signal of the same frequency, is controlled to discrete frequency outputs by variable voltages or variable width pulses, proportional to the difference in phase between the two signals, from the phase detector which pulses are applied to the oscillator through loop filters. Each loop filter is an RC circuit which integrates the pulses and serves as a memory to retain a relatively constant voltage thereacross. Therefore, when a specific loop filter is switched into the circuit the voltage controlled oscillator is rapidly switched to a discrete frequency output proportional to the voltage stored in the loop filter.

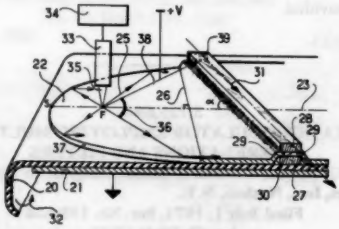


3,729,689

TRAVELING WAVE EXCITED GAS LASER

Bruno Godard, Gif-sur-Yvette, and Bernard Lacour, Villebon, both of France, assignors to Compagnie Generale D'Electricite, Paris, France

Filed Dec. 23, 1971, Ser. No. 211,374
Claims priority, application France, Dec. 30, 1970, 7047312
Int. Cl. H01s 3/09, 3/02
U.S. Cl. 331—94.5 **21 Claims**



A gas laser in which the gaseous active medium is triggered by a plane progressive discharge wave generated by a flat electrical conductor.

3,729,690

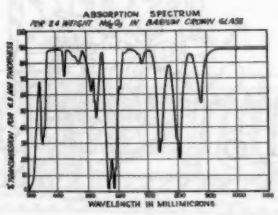
MEANS FOR PRODUCING AND AMPLIFYING OPTICAL ENERGY

Elias Snitzer, Wellesley, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 168,012, Jan. 16, 1962, which is a continuation-in-part of Ser. No. 148,204, Oct. 27, 1961. This application Nov. 17, 1969, Ser. No. 877,216

Int. Cl. H01s *3/16*

U.S. Cl. 331—94.5 29 Claims



Laser device and laserable material with glassy host of non-gaseous non-periodic atomic structure.

3,729,691

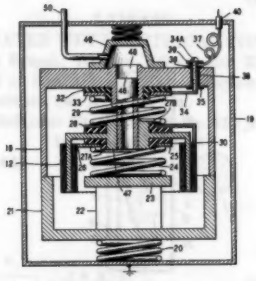
ELECTRO-MECHANICAL OSCILLATOR OF ELECTRODYNAMICAL AND ELECTROMAGNETIC TYPES

Wayne J. Beiswinger, Chester, and Walter R. Witte, Hampton, both of N.J., assignors to Verta-Tronics, Inc., Hampton, N.J.

Filed June 16, 1972, Ser. No. 263,438

Int. Cl. H03b *5/30*

U.S. Cl. 331—116 M 11 Claims



An electrodynamical or electromagnetic oscillator comprising an electric oscillator including three transistors and a mechanical oscillator having an armature coil movable in a magnetic field. The transistors are turned ON in sequence to start current flow in the armature coil which is moved in the magnetic field in one direction to generate in the armature coil a counter voltage of positive polarity. This voltage varies the amount of current flow in the armature coil until the one directional movement of the armature coil is terminated whereat the transistors are turned OFF. Thereafter, the armature coil is moved in the magnetic field in the opposite direction to generate in the armature coil a voltage of negative polarity which voltage holds the transistors turned OFF until the opposite directional movement of the armature coil is terminated. Modifications involve the electric oscillator including one or two transistors

3,729,692

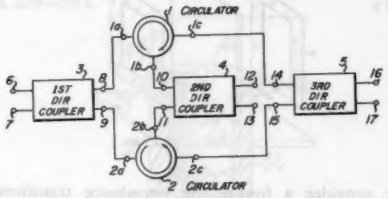
MICROWAVE CIRCULATOR CIRCUITS

Mitsuo Tanaka, Kokubunji, and Akira Honda, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 8, 1971, Ser. No. 160,762

Int. Cl. H01p *1/32, 5/12*

U.S. Cl. 333—1.1 3 Claims



The microwave circulator circuit comprises two circulators of the same characteristic each having three terminals and three 3dB directional couplers each having four terminals. Three pairs of terminals, each pair consisting of corresponding ones of the terminals of the two circulators, are connected with the three pairs of terminals, each pair consisting of two terminals of particular one of the four-terminal couplers so as to form a six-terminal composite circulator.

3,729,693

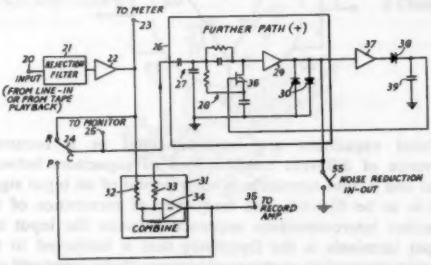
COMPRESSOR/EXPANDER SWITCHING METHODS AND APPARATUS

Ray Milton Dolby, 346 Clapham Road, London, England

Filed Aug. 2, 1971, Ser. No. 168,069

Int. Cl. H04b *1/64*; H03g *7/00*

U.S. Cl. 333—14 45 Claims



The invention relates to compressors and expanders wherein the input signal has additively or subtractively combined therewith the output of a processing means which limits the further signal component contributed thereby so that, at small input levels, the input signal is substantially boosted or bucked whereas, at large input levels, the further signal component has negligible effect. The invention provides switching arrangements for switching efficiently between compressor and expander configurations, especially for use in or with tape recorders.

3,729,694

STRIP TRANSMISSION LINE BROADBAND 4:1 IMPEDANCE TRANSFORMER

Robert C. Huntington, Phoenix, and Lewis Wood, Scottsdale, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

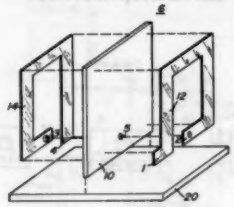
Filed Sept. 28, 1971, Ser. No. 184,418

Int. Cl. H03h *7/38*

U.S. Cl. 333—33 9 Claims

An electrical transformer for transforming electrical impedances in a four-to-one ratio includes a dielectric substrate having U-shaped metallized conductors deposited on opposite

surfaces of the substrate, the two U-shaped conductors being substantially superimposed on each other, and having one end of one of the conductors connected to the nearest end of the other conductor through a hole in the substrate. The transformer provides a four-to-one impedance transformation between an input port including the first and second ends of one of the U-shaped strips and another port including the unconnected ends of the two strips.

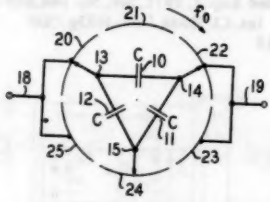


3,729,695

COMMUTATING CAPACITOR IMPEDANCE DEVICE

Joseph Henry Condon, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 18, 1972, Ser. No. 254,384
Int. Cl. H03h *7/10, 7/14*
U.S. Cl. 333—70 A **11 Claims**



Plural capacitors are interconnected in a recurrent sequence of different combinations of capacitors between input and output terminals in each period of an input signal that is to be filtered. The frequency of recurrence of the capacitor interconnection sequence between the input and output terminals is the frequency that is subjected to the greatest attenuation or response between those input and output terminals. Different arrangements for commutating the capacitor connections through the mentioned sequence are shown. Applications of the resulting commutating capacitor unit for bandpass filtering and band rejection filtering are also presented.

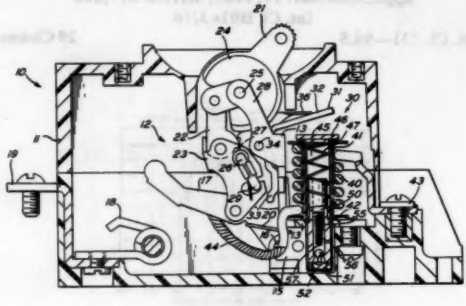
3,729,696

TIME DELAY ACTUATOR

Ralph Pope, Robbinsville, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed April 26, 1972, Ser. No. 247,732
Int. Cl. H01h *7/03*
U.S. Cl. 335—62 **9 Claims**

A hydraulic-magnetic time delay actuator for use with circuit breakers, switches or relays, comprising a non-magnetic time delay tube encircled by a solenoid coil. The tube contains a retarding fluid and a magnetic core, the core being movable longitudinally in the tube in response to the magnetic flux generated by the coil. An armature is pivotally located in the magnetic field of the coil and is movable thereby to actuate the relay, circuit breaker or switch. The movable core has formed therethrough an axial bore which houses a valve and forms a seat for the valve adjacent one end of the bore. A helical stop spring, a portion of which has an outer diameter greater than the interior diameter of the bore, is located therein. The stop spring is inserted into the bore by twisting the spring to reduce its diameter while concurrently pushing it into the bore. The spring is held in place in the bore by frictional engagement with the interior surface thereof. The leading edge of the inserted stop spring is located a preselected distance from the valve seat to limit the movement of the valve away from its seat. The stop spring is tapered slightly in the direction of the valve and is formed of a magnetically permeable material in order to increase the efficiency of the actuator.

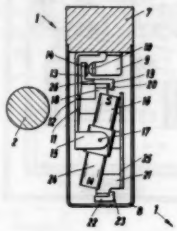


3,729,697

BISTABLE ELECTRIC SWITCH

Henning Hounsgard, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 8, 1971, Ser. No. 196,321
Int. Cl. H01h *35/18*
U.S. Cl. 335—205 **7 Claims**



The invention relates to a bistable electric switch assembly of the type having an actuating permanent magnet pivotally mounted relative to a central axis and held in each of its stable positions by two soft iron pole pieces offset from the central plane. The actuating magnet is responsive to an operating permanent magnet arranged to pass one of the poles of the actuating magnet and disposed at a right angle relative thereto. Fixed and movable contacts are provided with the movable contact being mounted on an armature which forms a variable width air gap with one of the pole pieces. A spring biases the armature and the movable contact towards an open position. A substantial part of the magnetic flux extends across the air gap which sequentially causes closing and opening forces to be exerted on the armature of the movable contact depending on the position of the permanent actuating magnet.

3,729,698

TERMINAL INTERCONNECTIONS

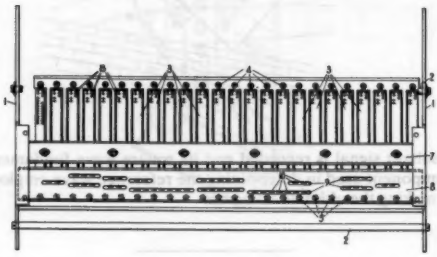
Peter Frederick Chapman, Kent, England, assignor to Elliott Brothers (London) Ltd., London, England

Filed Jan. 25, 1971, Ser. No. 109,116

Claims priority, application Great Britain, Jan. 28, 1970, 4,127/70

Int. Cl. H01r *29/00*

U.S. Cl. 339—18 R 9 Claims



A method of interconnecting alternate (for example) terminals in a row. An insulating flexible strip is woven in and out of the terminals to separate them into two groups. Terminals in the same group are interconnected by a strip of copper running along the terminals the strip being either a deposit on the insulating strip or a straight bar running along the outside of the terminals, according to the current carrying requirements. In the latter case the copper bar is soldered to its group of terminals by resistance heating the bar having expendable end portions to which connections are made.

3,729,699

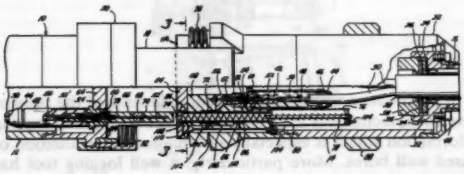
UNDERWATER WET ELECTRICAL CONNECTOR

Edward Miles Briggs; William Edgar, and Rodgers Eugene Rimmer, all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed June 29, 1971, Ser. No. 157,917

Int. Cl. H01r *13/44*

U.S. Cl. 339—42 9 Claims



An electrical connector designed for engagement and disengagement under water at very great depths with high voltage and amperage capacity. The connector incorporates a dummy piston to seal the female electrical contact, which is displaced by the male pin. Sealing means and hydrostatically compensated dielectrical oil supply means are disclosed.

3,729,700

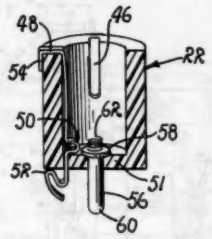
A UNIVERSAL FEMALE RECEIVER FOR MINIATURE LAMP BASES

Wallace F. Johnson, 7560-A North Charles, and William H. Tilson, 1287 West Shaw, both of Fresno, Calif.

Division of Ser. No. 763,148, Sept. 27, 1968, Pat. No. 3,576,990. This application Oct. 26, 1970, Ser. No. 84,241

Int. Cl. H01r *13/12*

U.S. Cl. 339—59 L 1 Claim



A universal female receiver having a flexible body and including a slotted internal surface. The receiver thus is adapted to receive miniature lamp bases without regard to their configuration.

3,729,701

LONGITUDINAL TOP SPRING RECEPTACLE

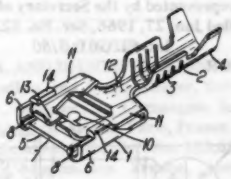
Philip Sydney Smith, Bideford, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 1, 1971, Ser. No. 177,027

Claims priority, application Great Britain, Oct. 3, 1970, 47,105/70

Int. Cl. H01r *15/12*

U.S. Cl. 339—223 R 4 Claims



An electrical tab receptacle has a channel-shaped receptacle portion having spring arms extending from one end of the base of the channel and overlying the base, the arms being locked against outward movement by engagement with ears formed on the free edge of the channel sides.

3,729,702

ACOUSTIC SENSING DEVICE

Basil B. Beeken, New Haven, and Robert F. O'Keefe, Trumbell, both of Conn., assignors to Automatic Switch Co., Florham Park, N.J.

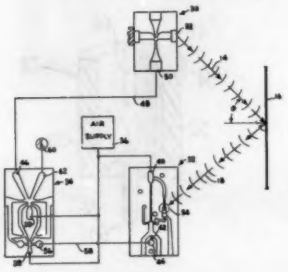
Filed Dec. 21, 1970, Ser. No. 100,183

Int. Cl. G01s *9/68*

U.S. Cl. 340—1 R 4 Claims

A sensing device having a high frequency sonic wave source that generates an acoustic beam is supplied by a fluid source at above ambient pressure serially connected through a normally open fluidic switch connected in the circuit as an OR gate. The sonic wave generator is disposed to direct an acoustic beam toward a target where it is reflected towards the control input of an acoustically sensitive fluidic receiver whose output is connected to the control input of the fluidic switch. The latter is modulated by the output of the receiver which is responsive to the acoustic beam in such a way that the fluidic

switch is changed to a flow inhibiting condition by the receiver when the reflected acoustic beam is present and to a flow passing condition by the receiver when the reflected acoustic beam is absent. The sonic wave generator is thereby maintained in an oscillatory mode in an on-off sequence such as an equal wave multivibrator. The period of the multivibrator in the sensing device is dependent on two factors: (1) the time constant of the fluidic circuit and (2) the time of propagation



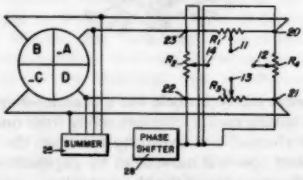
of the sound from the generator to the acoustically sensitive fluidic receiver. The former is a constant which can be determined for each circuit and the latter is dependent on variable conditions external to the fluidic circuit. This permits measurement of dependent variable conditions of the system, through which the acoustic beam passes, viz. distance that the acoustic beam travels as well as temperature, density and composition of the fluid medium through which the acoustic beam travels.

3,729,703

SUM DIFFERENCE TRANSDUCER SHADING

William J. Mueller, Portsmouth, and Frank W. Cuomo, East Providence, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy

Filed Jan. 27, 1966, Ser. No. 523,459
Int. Cl. G01s 3/80
U.S. Cl. 340—6 R **5 Claims**



A torpedo homing system providing wide angle steering information from a directional transducer sum and difference signals. A transducer having columns of pick-up elements arranged in quadrants to provide the sum and difference signals wherein a portion of the windings normally designated for the elements of each quadrant are wound on some of the elements in the adjacent quadrants to extend the region of correct torpedo steering.

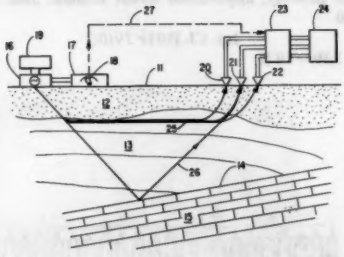
3,729,704

EARTH HOLOGRAPHY WITH SPECIAL REFERENCE WAVE

John B. Farr, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed July 2, 1971, Ser. No. 159,383
Int. Cl. G01v 1/34
U.S. Cl. 340—15.5 DS **6 Claims**

In earth holography the reference wave is produced by generating a low amplitude cyclic vibration essentially at the earth's surface and receiving this under steady-state conditions at the various geophones in the seismic spread. The



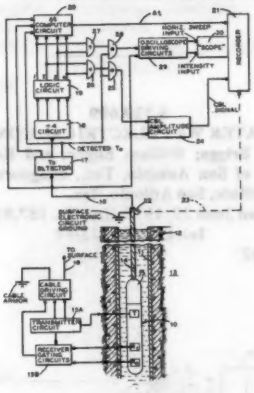
resultant signal is recorded and its square wave fundamental component used in determining the reference wave employed in making the ultimate hologram.

3,729,705

METHODS AND APPARATUS FOR ACOUSTIC LOGGING IN CASED WELL BORES

Victor E. Grijalva, El Marquez, Venezuela, assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,695
Int. Cl. G01v 1/16
U.S. Cl. 340—18 AC **8 Claims**



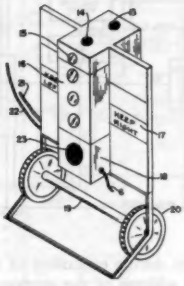
In accordance with illustrative embodiments of the present invention, techniques are disclosed for producing well logging information which is especially suitable for the evaluation of cased well bores. More particularly, a well logging tool has two acoustic receivers spaced apart from a repetitively energized acoustic transmitter. The amplitude of a selected portion of each electrical signal produced by the receiver nearest the transmitter in response to the emitted energy is measured to produce a log of the bonding of the casing to the cement surrounding the casing. The electrical signals produced by the receiver farthest from the transmitter are used to produce a variable density log which can be used in conjunction with the cement bond log to evaluate the bonding of the cement to both the casing and the formations which surround the cement.

3,729,706

PORTABLE TRAFFIC CONTROL SYSTEM WITH TELEVISION MONITORING

George P. Hein, Rt. 1, Box 395H, Eureka, Calif.

Filed Oct. 15, 1970, Ser. No. 80,876
Int. Cl. G08g 1/095
U.S. Cl. 340—31 R 1 Claim



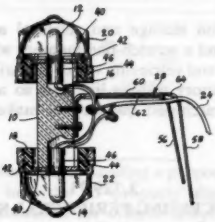
A portable, electronic, vehicular traffic control system consisting of a central control console, telemetry links and numerous, remote flagging units. The remote flagging units are located at the traffic thresholds to a restricted zone and relay traffic entrance orders from the central control console thereby allowing the remote control of the ingress and egress of vehicles into that zone. The remote flagging units contain remotely operated traffic signal lights, a communications system, mechanical and electrical traffic passage sensors and a closed circuit television camera. The system is primarily adapted for the control of vehicular traffic within a control zone where portions are visually obscured.

3,729,707

INTERMITTENTLY FLASHING WARNING LIGHT

Salvatore Gaetano, 95-26 78th Street, Ozone Park, N.Y.

Filed Dec. 28, 1971, Ser. No. 212,925
Int. Cl. B60q 1/52
U.S. Cl. 340—81 R 1 Claim



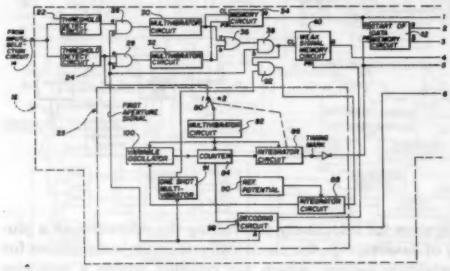
An intermittently flashing warning light for motor vehicles having a light-transmitting housing and a window mounting bracket connected to said housing for mounting on the outside of the vehicle, whereby warning light signals are intermittently emitted adjacent and above the roof of the motor vehicle and the vehicle is intermittently illuminated when the device is in operation.

3,729,708

ERROR DETECTING AND CORRECTING APPARATUS FOR USE IN A SYSTEM WHEREIN PHASE ENCODED BINARY INFORMATION IS RECORDED ON A PLURAL TRACK

Allan J. Wolfer, La Jolla, and Edward Cooper, San Diego, both of Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 27, 1971, Ser. No. 192,865
Int. Cl. G06f 11/10; G06k 5/04
U.S. Cl. 340—146.1 F 2 Claims



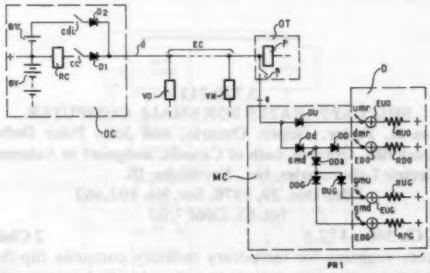
In apparatus for decoding a byte of phase encoded binary information having a plurality of information bits and one parity check bit for the information bits and wherein each such bit is recorded in a selected one of a plurality of tracks on a suitable information storage medium such as a magnetic tape, circuit means is provided for detecting parity errors in the information bits of each byte and for correcting a single missing information bit. Further, if more than one bit within a single byte of information is missing, the circuit means provide at the output a signal or manifestation indicative of such multiple error.

3,729,709

CONTROL AND IDENTIFICATION DEVICE

Rene Augris, Versailles, and Jacques Beyer, Saint-Cyr-l'Ecole, both of France, assignors to Compagnie Industrielle des Telecommunications cit-Alcatel, Paris, France

Filed June 16, 1971, Ser. No. 153,682
Claims priority, application France, June 16, 1970, 7022110
Int. Cl. H04q 9/06
U.S. Cl. 340—169 11 Claims

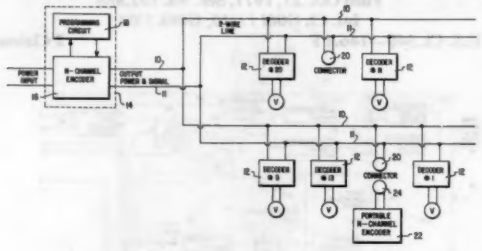


A control member and identification device, especially for telecommunications exchanges, involves two associated power sources and control circuits, arranged in a parallel manner, successively or simultaneously sending, over a common circuit, different control currents so as to act selectively upon the members.

3,729,710
FREQUENCY SELECTIVE REMOTE CONTROL SYSTEM

Russell Sherwin, Sunnyvale, Calif., assignor to Western Microwave Laboratories, Inc., Los Gatos, Calif.

Filed Dec. 28, 1971, Ser. No. 213,001
Int. Cl. H04q 9/00, 11/04
U.S. Cl. 340—171 R 18 Claims



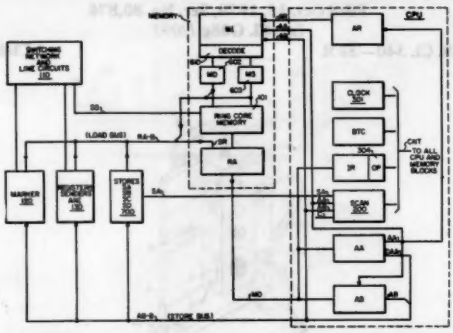
A system for selectively controlling the operation of a plurality of devices, e.g., the electrically operable water valves for an irrigation system, which are coupled across a two-wire power line. Each of the devices is provided with a frequency responsive circuit or decoder which responds to a signal of only a single frequency to connect the device across the line. The control of the decoders is provided by the output signal of an N-channel encoder which, although it can generate only a single frequency at a time, provides a sequence of the selected frequencies needed to operate selected devices in time multiplex. By providing each of the decoders with a capacitive circuit which has a fast charge-slow discharge characteristic in response to a signal of the associated predetermined frequency, and by rapid time sequencing of the signals produced by the fixed encoder, it is possible to simultaneously operate any number of the devices in a random fashion. To provide local selective control of any one of the devices, the system also includes a portable encoder which can selectively produce a signal of any one of the predetermined frequencies necessary to operate a device. When energized, the portable encoder also provides a high frequency output signal which disables the fixed encoder. Preferably, in order that the system be simple and as inexpensive as possible, output signals from the encoders are transmitted to the decoders and the pilot frequency output of the portable encoder is transmitted to the fixed encoder by superimposing the output signal from the encoders on the power line signal. To achieve this, plug-in connections are provided for the portable encoder at spaced locations along the power line.

3,729,711
SHIFT APPARATUS FOR SMALL COMPUTER

James H. Foster, Jasper, Ontario, and John Peter Dufton, Brockville, Ontario, both of Canada, assignors to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 29, 1970, Ser. No. 102,462
Int. Cl. G06f 7/00
U.S. Cl. 340—172.5 2 Claims

Store registers for temporary memory comprise flip-flops with input gating connections to a store bus and output gating connections via storage readout circuits to a load bus. Each store register has an input control gate with address connections enabled during execution of an instruction for a STORE operation with its address as the operand to store data therein from the store bus; and address connections to its individual storage readout circuit to load data from it via the load bus during execution of a LOAD instruction with its address as operand. One of the store registers SA is provided with two extra storage readout circuits for shift left and shift right functions, each having its own individual address, so that data which has been stored into store register SA may be loaded,

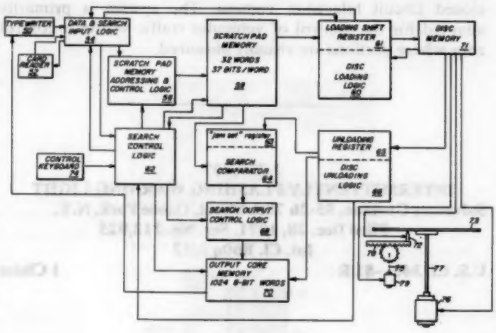


shifted left or right during execution of a LOAD instruction with the operand address of the storage readout circuit for that function.

3,729,712
INFORMATION STORAGE AND RETRIEVAL SYSTEM

David M. Glassman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 26, 1971, Ser. No. 119,288
Int. Cl. G06f 15/40
U.S. Cl. 340—172.5 38 Claims



An information storage and retrieval apparatus, using a magnetic disc and a scratch-pad memory which has the capability of storing and retrieving words of variable length, which scratch-pad memory utilizes link bits so as to link together lines in the scratch-pad memory to make longer words or phrases.

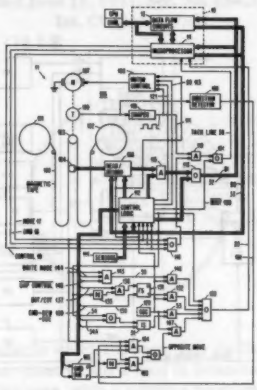
3,729,713
DATA PROCESSING PERIPHERAL SUBSYSTEMS

John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 4, 1971, Ser. No. 168,937
Int. Cl. G06f 11/06, 11/12
U.S. Cl. 340—172.5 24 Claims

Improved peripheral I/O devices, such as magnetic tape units and I/O controllers, are provided by selectively gating operational state indicating signals over multiplexed lines to an I/O controlling unit for continuously indicating intermediate operational states. The I/O controller, which may be a microprogrammed controller, responds to the intermediate

state indications for monitoring and ensuring the intermediate operational states are properly maintained. Upon termination of the intermediate operational state, the next status of the I/O device is sensed. Supplying intermediate operational state



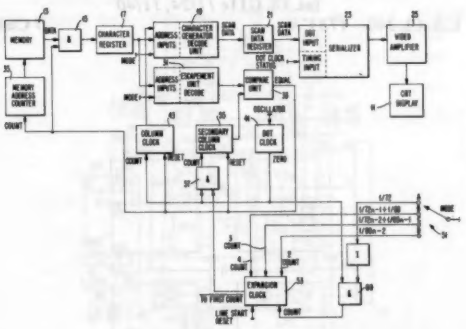
conditions enables the I/O controller to sense when malfunctions have occurred which prevent the device from informing the I/O controller that such malfunctions have, in fact, occurred.

3,729,714

PROPORTIONAL SPACE CHARACTER DISPLAY INCLUDING UNIFORM CHARACTER EXPANSION

Roderick S. Heard, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1971, Ser. No. 155,982
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 **4 Claims**



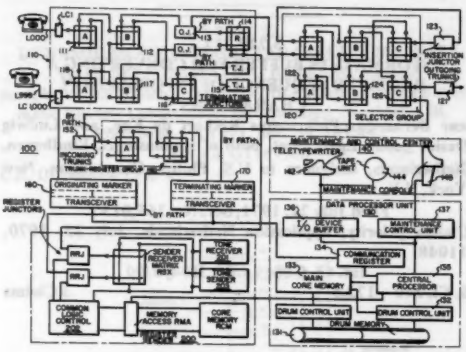
A system for uniformally expanding a proportionally spaced character display in order to properly align the smallest characters of the character set without affecting the proportional relationship of the characters in the character set. An extra vertical scan line is added to the displayed characters at an escapement increment determined by the character of the character set requiring the greatest proportion of scan line expansion per character width in order to achieve proper character definition. Those characters requiring an additional unit of escapement to be properly defined utilize the added vertical scan lines and excess added vertical scan lines are distributed in the "white space" between characters. The added display columns have the same affect as increasing the number of scans per unit of character escapement.

3,729,715

DIGITAL PROCESSING SYSTEM

Charles Kenneth Buedel, Wood Dale, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 3, 1971, Ser. No. 139,480
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 **4 Claims**



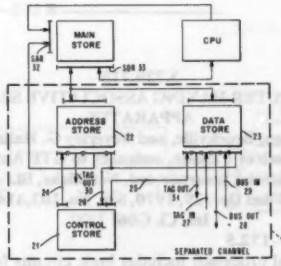
A register arrangement in a data processing system for controlling a telephone communication switching system includes a memory which is accessible on a time division multiplex basis to store call processing information and which is also accessible by a program-controlled computer processor on a random-access basis to perform processing functions, such as translation of dial digits to equipment location information. The memory can also be accessed on a random-access basis by a maintenance subsystem. Memory access logic circuits arrange and store information in the memory in the same manner in which information is stored in the local storage facilities in the data processor and the maintenance subsystem.

3,729,716

INPUT/OUTPUT CHANNEL

Jeganandaraj A. Arulpragasam, Redondo Beach, Calif.; John F. Minshull, and Alan S. Murphy, both of Hampshire, England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 12, 1971, Ser. No. 114,770
Claims priority, application Japan, Dec. 29, 1970, 45/121940; Great Britain, Feb. 13, 1970, 6,968/70
Int. Cl. G06f 3/00, 15/16
U.S. Cl. 340—172.5 **11 Claims**



A multiplex input/output (I/O) channel in which channel functions are carried out by associative stores. Three associative stores are used, a control store, an address store and a data store. The data store acts as a data buffer store and also handles most of the interchange of control signals between the channel and the I/O control units. Tag-in I/O signals are used directly as keys in table look-up on interface response tables

and initiate the appropriate response from the channel. The address store assemblies the main store address and is also responsible for some of the tag-out I/O signals. Subchannels are allotted only when they are needed. There are a limited number of subchannel areas and these are marked when they are allotted to control units. An extra marker identifies the subchannel currently in use. Any control unit can be allotted to any subchannel.

3,729,717

INFORMATION BUFFER FOR CONVERTING A RECEIVED SEQUENCE OF INFORMATION CHARACTERS

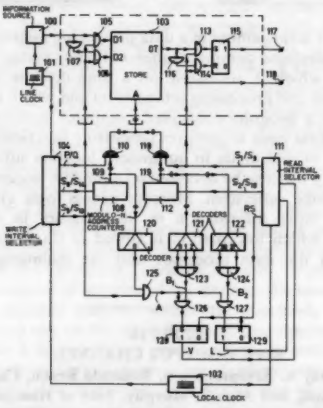
Oscar Bernardus Philomenus Rikkert de Koe, and Ludwig Desire Johan Eggermont, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed July 22, 1971, Ser. No. 165,013

Claims priority, application Netherlands, July 25, 1970, 7011048

Int. Cl. G08c *13/00*; H04j *3/06*

U.S. Cl. 340—172.5 **3 Claims**



An information buffer unit, comprising a random access store, for converting a received character sequence into a character sequence which is synchronous with an independent clock, for example, for use in digital telecommunication networks.

3,729,718

COMPUTER HAVING ASSOCIATIVE SEARCH APPARATUS

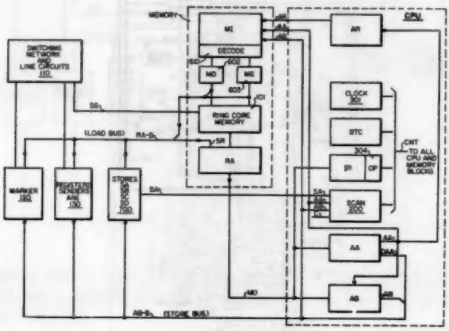
J. Peter Dufton, Brockville, and Beverley G. Hallman, Ottawa, Ontario, both of Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Dec. 29, 1970, Ser. No. 102,414

Int. Cl. G06f *7/00*

U.S. Cl. 340—172.5 **1 Claim**

The central processor includes logic circuits for a plurality of operation codes, one of which is a special SCAN code for associative searches to find the address of a word in which given data is stored. The apparatus includes two comparison circuits, one connected to compare the contents of a general register with the memory output data, and the other connected to compare the contents of an accumulator register with a constant. The given data is first placed in the general register and the start address for the search is placed in the accumulator register. Then reading a single program instruction word containing the SCAN operation code causes data words to be read and compared as the address in the accumulator register continues to advance until either the given data word is found or the address corresponding to the constant is reached.



During the search the instruction address register and the operation code instruction register are inhibited from changing so that all other program controlled processing is halted during the search.

3,729,719

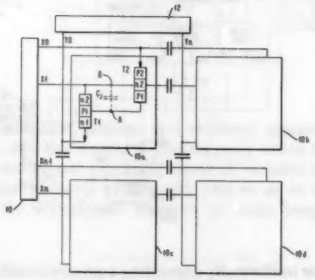
STORED CHARGE STORAGE CELL USING A NON LATCHING SCR TYPE DEVICE

Siegfried K. Wiedmann, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1970, Ser. No. 92,960

Int. Cl. G11c *11/24*, *11/40*

U.S. Cl. 340—173 CA **7 Claims**

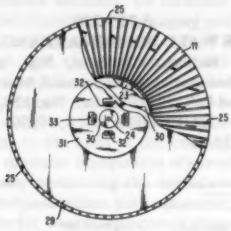


This specification discloses a stored charge storage cell for monolithic memories. The cell comprises a device akin to a silicon-controlled rectifier and can be schematically illustrated as an NPN and a PNP transistor connected together in what is commonly called a hook circuit. A fixed potential is applied to the semiconductor zone of the device not commonly used as a terminal for a silicon-controlled rectifier so that the cell is prevented from latching as a silicon-controlled rectifier or hook circuit would normally latch. The charge on the capacitance of collector-base PN junctions of the NPN and PNP transistors is then controlled to store data in the cell.

3,729,720
TURNTABLE FOR RIGIDLY MOUNTING THIN FLEXIBLE MAGNETIC DISCS

Richard H. Darling, Boca Raton, and Ludwig R. Siegl, Delray Beach, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1971, Ser. No. 154,330
Int. Cl. G11b 17/00
U.S. Cl. 340—174.1 E **8 Claims**

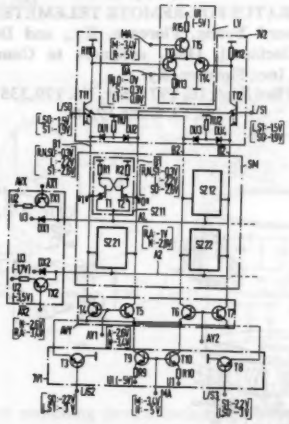


A disc recorder in which the recording medium is carried on a pliant circular sheet which is held in intimate contact, in the active recording area, with a rotating turntable by a pressure differential established by the configuration of a rotating turntable and the operatively positioned pliant disc.

3,729,721
CIRCUIT ARRANGEMENT FOR READING AND WRITING IN A BIPOLAR SEMICONDUCTOR MEMORY

Hans Glock, Odelzhausen, and Herbert Ernst, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 18, 1971, Ser. No. 172,821
Claims priority, application Germany, Sept. 23, 1970, P 20 46 929.8
Int. Cl. G11c 11/40
U.S. Cl. 340—173 FF **9 Claims**

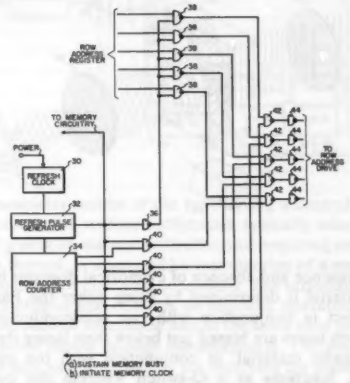


A circuit arrangement for reading and writing in a bipolar semiconductor memory whose memory cells are arranged in a memory matrix and comprise two multi-emitter transistors connected by way of an emitter of each to a selective conductor and by way of a second emitter of each to bit conductors and whose collectors are in each case connected with the base of the other multi-emitter transistor and a collector resistance, wherein the collector resistances of the memory cells of a matrix are jointly collected to a fixed voltage, a first data amplifier includes a pair of transistors arranged for matrix selection between the bit conductors and a first operating voltage by which in a nonselected condition the bit conductors are switched to a currentless condition, and an X-address amplifier including transistor switches which are connected to the selective conductors which, in the rest condition of the memory matrix, the voltage at the emitters of the multi-emitter transistors connected to the selective conductors is reduced to such an extent that only a residual current flows through the address amplifier.

3,729,722
DYNAMIC MODE INTEGRATED CIRCUIT MEMORY WITH SELF-INITIATING REFRESH MEANS

Joseph Patrick Shuba, Naperville, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 17, 1971, Ser. No. 181,443
Int. Cl. G11c 7/00
U.S. Cl. 340—173 R **8 Claims**

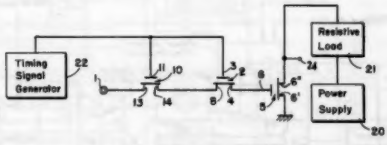


An integrated circuit memory operated in the dynamic mode is provided with a clock controlled refresh pulse generator, address counter and gating arrangement to periodically refresh the contents of each memory cell.

3,729,723
MEMORY CIRCUIT

Hirohiko Yamamoto, Minato-ku, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 1, 1971, Ser. No. 194,680
Claims priority, application Japan, Nov. 5, 1970, 45/96829
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R **3 Claims**



A memory circuit, which is preferably of integrated circuit construction, includes three insulated gate field effect transistors. Data is stored by the capacitance between the drain and source of the first transistor. Information inputs are supplied to an input terminal and then through the drain and source electrodes of the second and third transistors to the gate electrode of the first transistor. The second and third

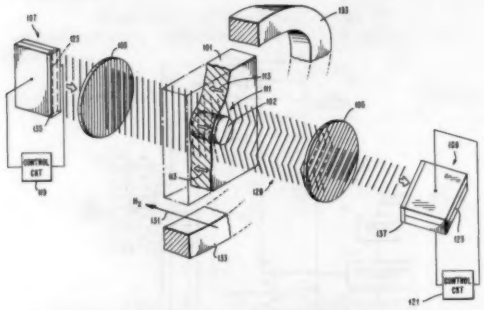
transistors are conductive only when a gate signal, which preferably is a pulsed timing signal, is applied to their gate electrodes. This circuit provides added protection against loss of information due to spurious signals reaching the input terminal.

3,729,724

HIGH-DENSITY MAGNETO-OPTIC READOUT APPARATUS

William E. Ahearn; George Stanley Almasi, both of Purdy Station, and Eugene Ronald Genovese, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 8, 1971, Ser. No. 151,047
Int. Cl. G11c *11/14, 11/42*
U.S. Cl. 340—174 YC **6 Claims**



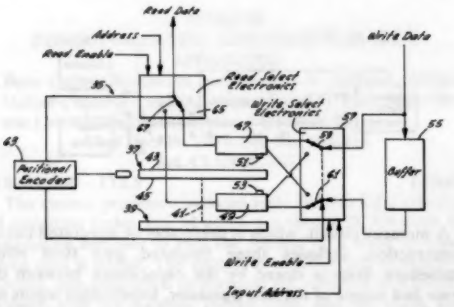
The presence and absence of cylindrical domains in a magnetic material is determined by using either the Faraday or Kerr effect in conjunction with two semiconductor lasers. When both lasers are biased just below their lasing thresholds, the magnetic material, in conjunction with the cylindrical domains, functions as a Q-switch wherein the cylindrical domains establish an optical cavity when they enter the optical path between the two lasers. When one laser is biased just below its lasing threshold and the other is biased in its lasing mode, the apparatus functions in a source-detector mode. The apparatus operating in either mode is very adaptable for multicell or array implementation.

3,729,725

REDUNDANT RECORDATION TO REDUCE ACCESS TIME

Joseph M. Denney, Palos Verdes Estates, and Ronald B. Selden, Canoga Park, both of Calif., assignors to Digital Development Corporation, San Diego, Calif.

Filed Sept. 13, 1971, Ser. No. 179,911
Int. Cl. G11b *5/02*
U.S. Cl. 340—174.1 G **12 Claims**



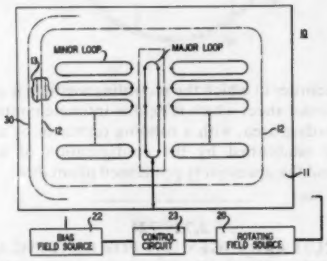
A memory including first and second regions along which data can be stored and first and second read/write heads. The read/write heads write information on the first and second regions, respectively. The heads are controlled so that they write the same information on both of the regions with the information written on the second region being out of phase with the information written on the first region. Each of the heads reads only the information which it recorded. By delaying the initiation of the write operation on the second track for one-half a revolution of the regions, access time equal to a two head per track system is obtained.

3,729,726

SINGLE WALL DOMAIN ARRANGEMENT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 22, 1972, Ser. No. 228,199
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **11 Claims**



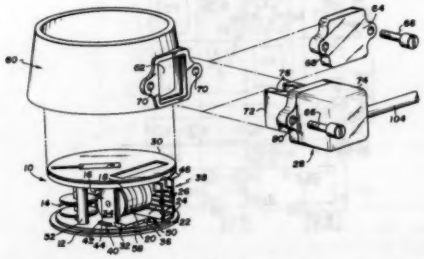
Spurious single wall domains, periodically introduced into the vicinity of an operating single wall domain circuit particularly during high speed operation, are eliminated by a propagation annulus encompassing the circuit. The annular is operative to move domains in a direction outwardly across its axis.

3,729,727

APPARATUS FOR REMOTE TELEMETERING

Robert Leonard Young, Florence, Ky., and Daniel Arron Seltzer, Cincinnati, Ohio, assignors to Gamon—Calmet Industries, Inc., Florence, Ky.

Filed Sept. 10, 1971, Ser. No. 179,335
Int. Cl. G08c *19/00*
U.S. Cl. 340—188 **20 Claims**



A system is disclosed for remotely providing information relating to the flow of fluid through a fluid meter with the system comprising: a register positioned on the fluid meter, with the register including an odometer sub-assembly comprising odometer wheels responsive to the flow of fluid through the meter for providing indication of such fluid flow and printed circuit boards cooperating with odometer wheels for providing electrical signals representative of fluid flow with the printed circuit boards having exposed contact pad areas thereon; the system further including a register cover en-

closing the register with the register cover including an access opening for exposing the contact pad areas of the printed circuit boards; and the system further including a connector removably secured to the register cover with the connector including a printed circuit board engaging portion passing through the access opening of the register cover into removable engagement with the printed circuit boards and the connector further including an enclosure removably secured to the printed circuit board engaging portion of the connector for receiving the ends of cables utilized to transmit the electrical signals to a remote location. To facilitate electrical connection, the printed circuit board engaging portion of the connector carries a plurality of pins one end of which engages a respective contact pad area on the printed circuit boards within the register and the other ends of which pass into the enclosure of the connector wherein there is disposed an apertured printed circuit board which facilitates the electrical connection of the pins to the ends of the cabling. The odometer sub-assembly is a modular component removable from the register thereby easily permitting the replacement of conventional odometer subassemblies with odometer sub-assemblies having printed circuit boards associated therewith when it is desired to provide a register with remote telemetering capabilities. In like fashion, the access opening provided in the register cover is normally sealed by a removable plate which is removed to permit the insertion of the aforementioned printed circuit board engaging portion of the connector when converting to remote telemetering operation. A remotely located receptacle is electrically connected to the other end of the cabling and provides an output point from which electrical information representative of fluid flow through the meter can be taken. The receptacle is housed in a novel structure readily facilitating removal, replacement and repair associated therewith.

3,729,728

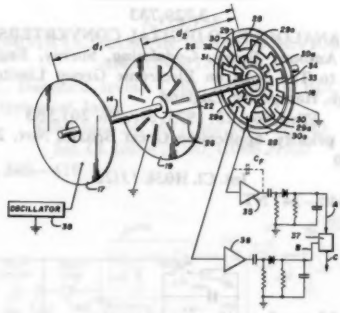
CAPACITIVE SWITCHING DEVICE

Edward V. Hardway, Jr., Houston, Tex., assignor to Spearhead, Inc., Houston, Tex.

Filed May 10, 1971, Ser. No. 141,696

Int. Cl. G08c *19/00*

U.S. Cl. 340—200 **13 Claims**



A capacitive switching device including a driven element with at least one active, conductive driven sector connected to a source of alternating voltage, a receptor element with at least one active, conductive receptor sector and a conductive shield element with at least one open slot permitting capacitive coupling between said driven sector and said receptor sector when these are in alignment with said slot. The elements are aligned with respect to each other so that relative movement of the shield element with respect to the driven and receptor elements produces output electrical signals responsive to a switching pattern on the driven element, the receptor element or on both. The shield element is preferably grounded.

ERRATUM

For Class 340—220 see:
Patent No. 3,729,181

3,729,729

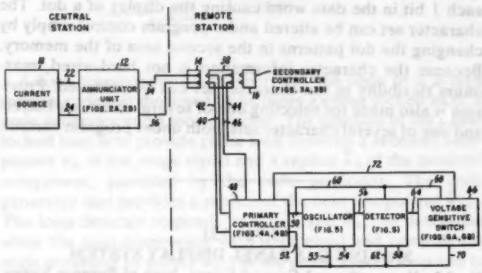
ANNUNCIATOR SYSTEM

Martin R. Geller, 318 East 19th Street, New York, N.Y., and David A. Goldman, Corton Heights Rd., Box 69, R.F.D. 1, Yorktown Heights, N.Y.

Filed Sept. 7, 1971, Ser. No. 178,244

Int. Cl. G08b *21/00*

U.S. Cl. 340—244 C **17 Claims**



An annunciator system of the type having a central annunciating station and remote receptacles typically adapted for receipt of a plug-in manual controller, not requiring power for operation thereof, is improved by introduction of a controller adapted to monitor changing conditions. The introduced controller is a plug-in unit deriving all required operating power through the remote receptacle and at the same time providing system control inputs through the receptacle. The introduced controller may also have facility for receiving the manual controller to provide the annunciator system with plural inputs. units. In a preferred arrangement, the system is shown in hospital usage where it provides for the monitoring of a liquid level.

3,729,730

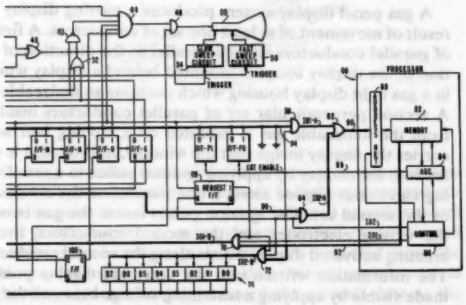
DISPLAY SYSTEM

Ernesto G. Sevilla, Herkimer, and Robert J. Titus, Sauquoit, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed April 14, 1971, Ser. No. 133,830

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **119 Claims**



A display system of very low cost and whose character set is program alterable. A processor memory has two areas which

control the display — a character buffer for representing the code of the character to be formed in each position of the display, and a dot pattern storage area which includes the dot patterns for all of the characters. Slow and fast sweeps across the face of a CRT occur in synchronism with a display system counter. During each cycle, a first address corresponding to the position of a character to be displayed is transmitted to the memory and a code representative of the character to be displayed is returned to the display system. This code is then combined with additional positional information derived from the counter to form a second address for transmission to the memory. The data word received back from the memory determines the locations of dots to be displayed in one line segment. The data word is shifted out of a shift register in synchronism with the fast sweep across the face of the CRT, each 1 bit in the data word causing the display of a dot. The character set can be altered under program control simply by changing the dot patterns in the second area of the memory. Because the character information is not hard-wired, maximum flexibility in the character set can be achieved. Provision is also made for selecting one of several character buffers and one of several character sets, both under program control.

3,729,731

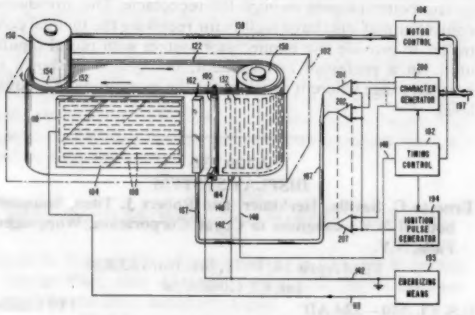
MOVING GAS PANEL DISPLAY SYSTEM

Karl L. Konnerth, and Conrad Lanza, both of Putnam Valley, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 23, 1971, Ser. No. 155,970

Int. Cl. G08b *5/36*

U.S. Cl. 340—324 M **13 Claims**



A gas panel display system produces a moving display as a result of movement of at least one set of conductors. A first set of parallel conductors aligned parallel to the direction of motion of the display image is mounted behind a display window in a gas tight display housing which contains an ionizeable gas. A second perpendicular set of parallel conductors insulated from the ionizeable gas is mounted on a moving belt which carries the display image past the window. Information is written into the display by applying ignition pulses to a set of writing electrodes aligned along a line parallel to the conductors of the second set. The ignition pulses ionize the gas between the writing electrodes and the second conductors, thereby creating activated display points along the second conductors. The information written into the activated display points is made visible by applying a sustaining voltage between the conductor sets to sustain a glow discharge in the ionizeable gas at the activated points. An erase roller located just before the writing electrodes erases any remaining, previously written, information.

3,729,732

CASCADE-FEEDBACK ANALOG TO DIGITAL ENCODER WITH ERROR CORRECTION

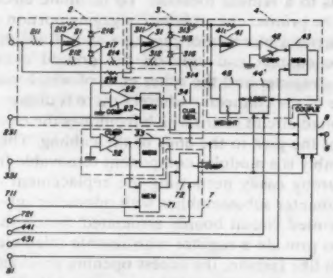
Kaoru Yano, Minato-ku, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed July 27, 1971, Ser. No. 166,639

Claims priority, application Japan, Jan. 29, 1971, 46/3398

Int. Cl. H03k *13/02*

U.S. Cl. 340—347 AD **3 Claims**



A coder for converting an input analog signal into a digital output signal containing first, second and other bit signals, includes a first coding circuit activated by the input analog signal to generate the output of the first coding circuit, a second coding circuit activated by the first bit signal to generate the second bit signal judged at a first time point, a feedback coding circuit energized by the output of the second coding circuit to generate the other bit signals; the first, second and other bit signal constituting the digital signal at an output terminal; the second and other bit signals subject to error due to the level of the output of the second coding circuit at the first time point; and a bit level comparison circuit comparing the second bit signal judged at the first time point and at a second time point succeeding the first time point for producing a comparison signal to correct the second and other bit signals, whereby the first bit signal and the corrected second and other bit signals after the second time point are included in the digital signal at the output terminal.

3,729,733

ANALOGUE TO DIGITAL CONVERTERS

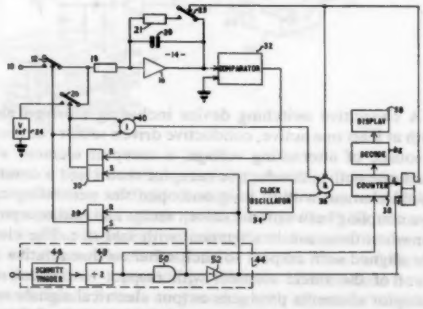
Howard Anthony Dorey, Godalming, Surrey, England, assignor to The Solatron Electronic Group Limited, Farnborough, Hampshire, England

Filed Nov. 23, 1971, Ser. No. 201,553

Claims priority, application Great Britain, Nov. 24, 1970, 55,817/70

Int. Cl. H03k *13/20*

U.S. Cl. 340—347 NT **7 Claims**



In an integrating analogue-to-digital converter, particularly a digital voltmeter, the input voltage is applied to an integrator

3,729,733

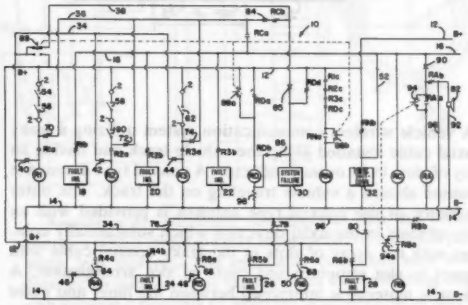
for a sampling period equal to one period of the local line frequency (e.g., 50 Hz or 60 Hz). The integrator has a transfer function of the form $1/pT$ for a fixed period S just less than the minimum possible duration of the sampling period, and of the form $1/(1+pT)$ for the remainder dS of the sampling period. Thus D.C. voltages are integrated for a known fixed period, while normal mode interference at the local line frequency is integrated out.

3,729,734

FIRST FAULT ANNUNCIATOR SYSTEM

Rudyard William Kipling, Lennoxville, Quebec, Canada, assignor to Ingersoll-Rand Company, New York, N.Y.

Filed June 15, 1971, Ser. No. 153,329
Int. Cl. G08b *19/00*
U.S. Cl. 340—415 **6 Claims**



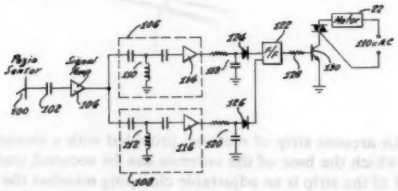
Fault occurrence displaying system, for use with machinery, which automatically signals and initially displays only a first-occurring of perhaps several machine faults which occasion machine shut-down. The system includes means for automatically signaling and displaying both system failure and proper system functioning as well as means automatically operative to hold a fault signal on until manually turned off and means to hold successive fault signals inoperative until the first-occurring fault signal is silenced (i.e., turned off).

3,729,735

REMOTE ULTRASONIC SENDING DEVICE FOR AIRCONDITIONER

Ernest C. Dageford, Irvine, Calif., assignor to BEC Products, Inc., Davenport, Iowa

Filed June 24, 1971, Ser. No. 156,383
Int. Cl. G05d *23/00*; **G08b** *21/00*
U.S. Cl. 340—419 **12 Claims**



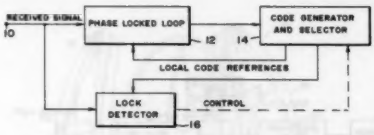
A remote sending device controlled by the opening or closing of a window to turn an air conditioning system on and off. The window actuator unit is an ultrasonic transmitter using a tuning fork and the ultrasonic transmitter may include either one tuning fork to provide a single frequency system or two tuning forks to provide a double frequency system which is fail safe. The receiving unit controls a motor switch to activate or deactivate the blower motor in an air conditioning unit so as to control the air conditioning to a given area.

3,729,736

CODE REGENERATIVE CLEAN-UP LOOP TRANSPONDER FOR A μ-TYPE RANGING SYSTEM

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and William J. Hurd, La Canada, Calif.

Filed Nov. 8, 1971, Ser. No. 196,399
Int. Cl. G01s *9/56*
U.S. Cl. 343—6.5 R **10 Claims**



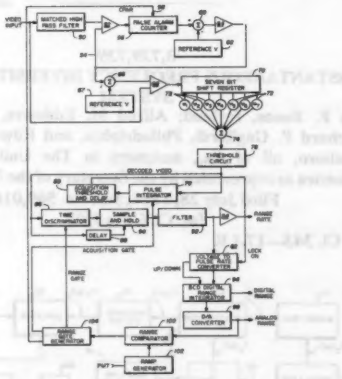
A loop transponder for regenerating the code of a μ-type ranging system is disclosed. It includes a phase locked loop, a code generator and a loop detector. The function of the phase locked loop is to provide phase lock between a received component w_k of the range signal and a replica $\hat{w}_k$ of the received component, provided by the code generator. The code generator also provides a replica of the next component $\hat{w}_{k+1}$. The loop detector responds to w_k, $\hat{w}_k$ and $\hat{w}_{k+1}$ to determine when the next component w_{k+1} is received and controls the code generator to supply $\hat{w}_{k+1}$ to the phase locked loop and to generate a replica $\hat{w}_{k+2}$ of the next component.

3,729,737

RANGE TRACKING SYSTEM FOR USE IN AN INDEPENDENT AIRCRAFT LANDING MONITOR

Edward F. Asam, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 15, 1970, Ser. No. 55,165
Int. Cl. G01s *9/18*
U.S. Cl. 343—7.3 **12 Claims**



A range tracker for an aircraft landing monitor system which includes a plurality of passive reflectors arranged adjacent an airport runway in a predetermined pseudorandom coded configuration. A radar system carried by an aircraft transmits pulsed radar signals which are reflected from the reflectors according to the predetermined pseudorandom code. Correlation circuitry onboard the aircraft detects the presence of the coded radar returns from the reflectors. A range tracking circuit is operable in response to reception of the coded radar returns from the reflectors to determine and display the range of the aircraft to touchdown on the runway.

3,729,738
SPECTRUM ANALYZERS

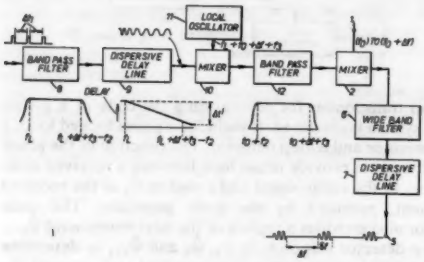
Malcolm Geoffrey Cross, Chelmsford, and Joseph Thomas Barrow Musson, Westcliff-on-Sea, both of England, assignors to The Marconi Company Limited, London, England

Filed Aug. 16, 1971, Ser. No. 172,054

Claims priority, application Great Britain, Sept. 4, 1970, 42,375/70

Int. Cl. G01r 23/16

U.S. Cl. 343—5 SA 9 Claims



A spectrum analyzer of the type where input signals to be analyzed are mixed with a repeatedly swept frequency signal so that output signals are provided which are time related to the frequency of the input signals. The repeatedly swept frequency signal is produced by applying a train of pulses to a dispersive delay via a bandpass filter having a characteristic such that the impulse spectrum of each of the pulses in the pulse train is reduced so as to match that of the dispersive delay.

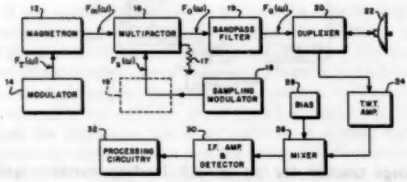
3,729,739
INSTANTANEOUS FREQUENCY DIVERSITY RADAR SYSTEM

Allen F. Beans, Ivyland; Alfred M. Eddowes, Doylestown; Richard P. Gagliardi, Philadelphia, and Edward E. Koos, Hatboro, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy

Filed July 28, 1966, Ser. No. 569,010

Int. Cl. G01s 9/02

U.S. Cl. 343—17.1 R 9 Claims



1. An apparatus for generating instantaneous frequency diversity signals comprising:

means providing pulse modulated signals; and

means sampling said signals at selected intervals for providing output signals of instantaneous frequency diversity.

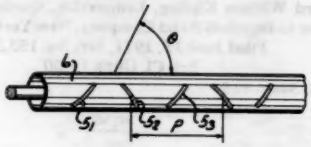
3,729,740
VEHICLE ANTENNA FOR VEHICULAR COMMUNICATION SYSTEM USING LEAKY COAXIAL CABLE

Tsuneo Nakahara; Hiroshi Kitani, and Kenichi Yoshida, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 20, 1971, Ser. No. 108,071

Int. Cl. H01q 13/10

U.S. Cl. 343—713 4 Claims



A vehicle wireless communication system utilizing a leaky coaxial cable installed along the vehicle track and having an array of slots in its outer conductor. A coaxial type antenna is mounted aboard a vehicle traveling on the track. The outer conductor of the coaxial type antenna is provided with an array of slots in the axial direction which substantially coincides with the array of slots in the leaky coaxial cable with respect to slot structure and cycle of slot arrangement. A dielectric material is interposed between the inner and outer conductors of the antenna and is adjustable to equalize the wavelength contraction ratio of the antenna to that of the leaky coaxial cable.

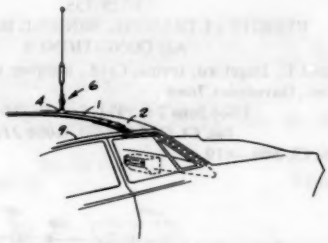
3,729,741
AUTOMOBILE ANTENNA SUPPORT

Oliver O. Otto, 2866 Tulare Avenue, Richmond, Calif.

Filed April 19, 1971, Ser. No. 135,322

Int. Cl. H01q 1/32

U.S. Cl. 343—713 2 Claims



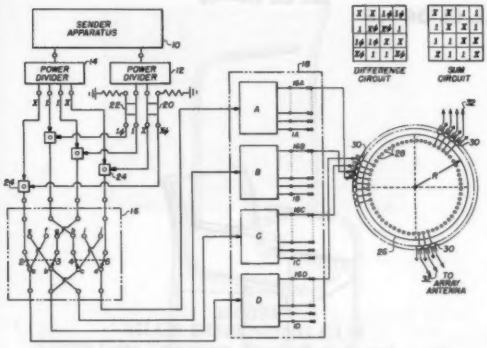
An arcuate strip of material provided with a threaded boss on which the base of the antenna can be secured; under each end of the strip is an adjustable clamping member the longitudinal slots of which are engageable by bolts extended through holes in the strip so as to adjust the clamps to the width of the roof of the automobile; claws on the ends of the clamps can be fitted over the drip molds on each side of the roof; the unit can be tightened by putting a perforated strip over the bolts at one end and then with a screw driver bear against the claw end of the strip to pull the opposite claw tightly under the mold and then by securing a remaining bolt fixing the unit firmly in position; on the under side of the arcuate strip there are a pair of spaced sponge wire cushions providing a groove inbetween for the lead wire from the antenna.

3,729,742

SIMULTANEOUS SUM AND DIFFERENCE PATTERN TECHNIQUE FOR CIRCULAR ARRAY ANTENNAS

Jerry E. Boyns, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 14, 1972, Ser. No. 280,627
Int. Cl. H01q 3/26
U.S. Cl. 343—854 6 Claims



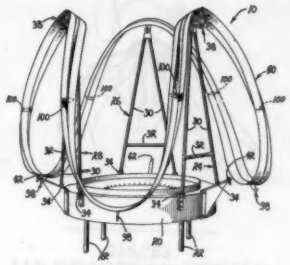
Apparatus for obtaining simultaneous sum and difference patterns with a circular-array antenna fed by an R-2R parallel-plate lens systems. The apparatus comprises sum and difference circuits which in combination with switching circuitry can provide a plurality of different combinations of amplitude taper to a multiple input/output port lens system to achieve 360° scan from an array antenna fed thereby. A sum power divider and a difference power divider are connected directly and through 180° hybrid couplers respectively, to one side of a DPDT, amplitude pass-around switch to provide selectively predetermined combinations of the outputs of the two power dividers. The resulting combinations are fed to the ports of the lens system in a conventional manner. The sum pattern is used for transmission, and both the sum and difference patterns are used on reception.

3,729,743

COLLAPSIBLE STRUCTURE FOR AN ANTENNA REFLECTOR

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Marc R. Trubert, Covina, Calif.

Filed Oct. 26, 1971, Ser. No. 192,141
Int. Cl. H01q 15/20
U.S. Cl. 343—915 20 Claims



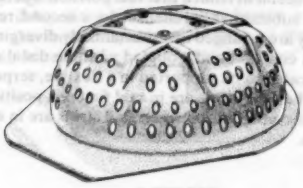
A collapsible support for an antenna reflector particularly suited for use in supporting antennas aboard space vehicles and the like. The support is characterized by a rigid base, a plurality of mutually spaced struts pivotally coupled with the base at their base ends, and supported for simultaneous pivotal displacement from a first rest position wherein they are arranged in substantial parallelism to a second rest position wherein they are arranged in a substantially diverging relationship, and an endless band, coupled with the distal ends of the struts, fabricated to be supported in a flexible, serpentine configuration when the struts are in said first rest position and in a rigid annular configuration when said struts are in said second rest position.

DESIGNS

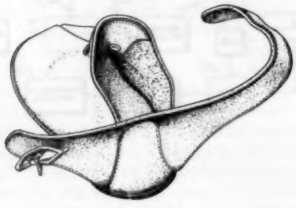
APRIL 24, 1973

226,744
PROTECTIVE GARMENT FOR THE ARMS
Lillian A. Chaffin, 846 S. Sycamore, Los Angeles, Calif. 90036
Filed June 30, 1971, Ser. No. 158,656
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

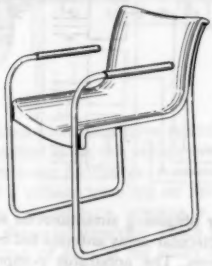
226,745
PROTECTIVE HAT OR SIMILAR ARTICLE
Charles C. Snow, 183 N. 1300 W., Salt Lake City, Utah 84116
Filed Oct. 6, 1971, Ser. No. 187,219
Term of patent 7 years
Int. Cl. D2—*03*
U.S. Cl. D2—231



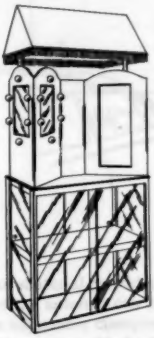
226,746
BABY SHOE
Georges Clement Bidegain, Pau, France, assignor to Bidegain S.A., Pau, France
Filed July 14, 1971, Ser. No. 162,969
Claims priority, application France Jan. 21, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—278



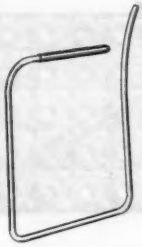
226,747
CHAIR OR THE LIKE
Earl H. Koepke, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.
Filed June 22, 1971, Ser. No. 155,681
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



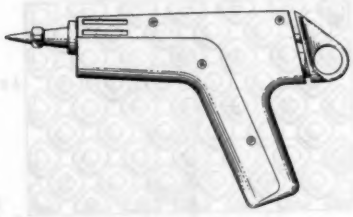
226,748
DISPLAY STAND
Bernard J. Miller, Chicago, Ill., assignor to The Gillette Company, Boston Mass.
Filed May 18, 1971, Ser. No. 144,709
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



226,749
COMBINED LEG AND ARMREST FOR A CHAIR OR THE LIKE
Earl H. Koepke, Sturgis, Mich., assignor to Harter Corporation, Sturgis, Mich.
Filed June 22, 1971, Ser. No. 155,680
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—194



226,750
GLUE DISPENSING GUN
Morris Gary Grossman, Wyckoff, N.J., assignor to Cooper Industries, Inc., Houston, Tex.
Filed Apr. 7, 1971, Ser. No. 132,255
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

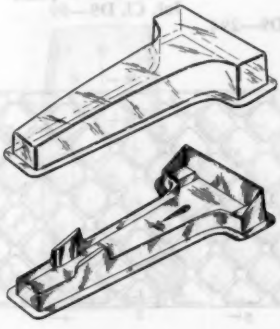


226,751
DRAWER PULL
Emil J. Bocade, Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.
Filed Feb. 16, 1972, Ser. No. 227,011
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—167

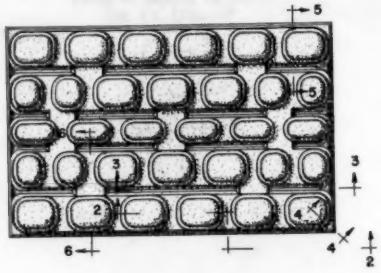
226,752
HANGER FOR DISPLAY PACKAGE
Naoyuki Iso, 3 of 27, Oimatsu-cho, Nishinomiya, Japan
Filed Nov. 26, 1971, Ser. No. 202,721
Term of patent 14 years
Int. Cl. D6—*08;* D8—*08*
U.S. Cl. D8—255

226,753
JAR OR SIMILAR ARTICLE
D. J. Quintal, Makati, Rizal, Philippines, assignor to Bristol-Myers Company, New York, N.Y.
Filed Nov. 24, 1971, Ser. No. 202,061
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—118

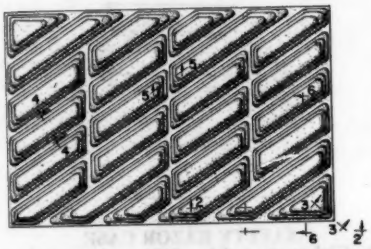
226,754
SAFETY RAZOR CASE
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed May 5, 1972, Ser. No. 250,846
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186



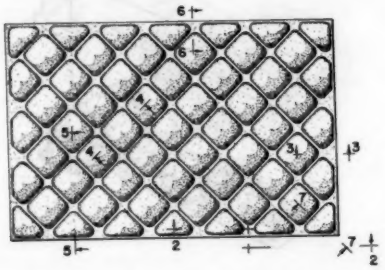
226,755
PACKAGING PAD OR THE LIKE
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,274
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



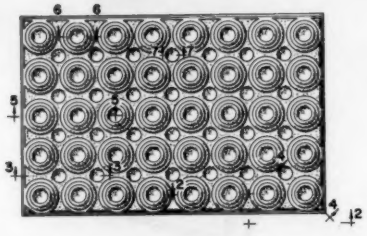
226,756
PACKAGING PAD OR THE LIKE
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,275
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



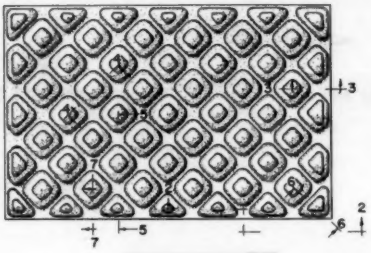
226,757
PACKAGING PAD OR THE LIKE
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,276
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



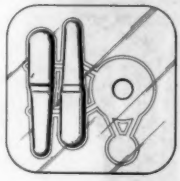
226,758
PACKAGING PAD OR THE LIKE
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,312
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



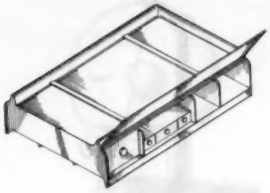
226,759
PACKAGING PAD OR THE LIKE
James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.
Filed Sept. 20, 1971, Ser. No. 182,313
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—294



226,760
DETECTOR FOR BLOOD ANALYSIS
James J. Sirago, 910 Enterprise, Inglewood, Calif. 90302, and Edward B. Walton, 3129 Yale Ave., Marina Del Rey, Calif. 90291
Filed Aug. 27, 1971, Ser. No. 175,797
Term of patent 14 years
Int. Cl. D24—*02;* D9—*04*
U.S. Cl. D16—1 R

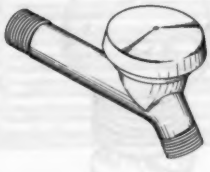


226,761
CAR TOP CARRIER
Arthur W. Perreault, 1133 Thomas Ave., Coquitlam, British Columbia, Canada
Filed Nov. 5, 1971, Ser. No. 196,263
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27 C

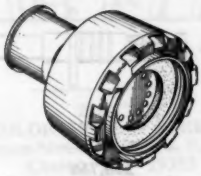


226,762
COMBINED FLUID REGULATOR AND VALVE
Lajos J. Vidakovits, Denver, and Richard N. Bailey, Littleton, Colo., assignors to C. A. Norgren Co., Littleton, Colo.
Filed Nov. 15, 1971, Ser. No. 199,083
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—21

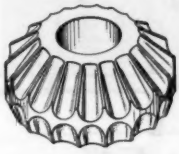
226,763
ANTI-SIPHON FAUCET
Jack K. Rauh, Hacienda Heights, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Mar. 8, 1972, Ser. No. 233,003
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



226,764
SPRAY HEAD
Jack K. Rauh, Hacienda Heights, Calif., assignor to Modern Faucet Mfg. Co., Los Angeles, Calif.
Filed Oct. 22, 1971, Ser. No. 191,966
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



226,765
WATER SPRAY SKIRT FOR AN AERATOR
Irving A. Ward, 2709 La Cuesta Ave., Hacienda Heights, Calif. 91745
Filed Jan. 7, 1972, Ser. No. 216,319
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35



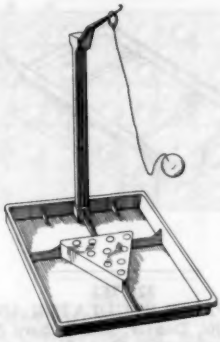
226,766
DEODORANT CONTAINER OR THE LIKE
Raymond P. Stoy, New Rochelle, and Anthony G. Randazzo, Syosset, N.Y., assignors to American Home Products Corporation, New York, N.Y.
Filed June 7, 1972, Ser. No. 260,719
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—150

226,767
DENTAL GUN
William B. Dragen, R.F.D., Burn St., Fairfield, Conn. 06430
Filed Mar. 3, 1972, Ser. No. 231,771
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1 D

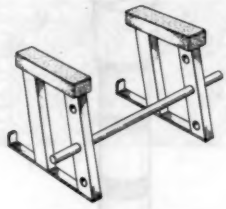
226,768
DENTAL FLOSS HOLDER
Martin W. Schwartz, 4537 Valmonte Drive, Sacramento, Calif. 95825
Filed June 14, 1972, Ser. No. 262,505
Term of patent 14 years
Int. Cl. D24—*99;* D28—*01*
U.S. Cl. D24—1 D

226,769
TELEPHONE UNIT TEST SET
William Charles Hatfield and John Martin Reed, Garland, Tex., assignors to Electronic Communications Services, Inc., Garland, Tex.
Filed Jan. 20, 1971, Ser. No. 108,247
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26

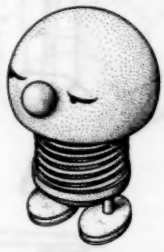
226,770
BOWLING TETHERBALL GAME BOARD
Joseph J. Prischak, 3508 Zimmerly Road; Terry W. McQuaid, 4236 Feidler Drive; and Dennis J. Prischak, 3508 Zimmerly Road, all of Erie, Pa. 16506
Filed June 25, 1971, Ser. No. 157,078
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BB



226,771
PORTABLE EXERCISER
Lawrence I. Jacobs, P.O. Box 4092, Palm Springs, Calif. 92262
Filed Sept. 13, 1971, Ser. No. 180,255
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K

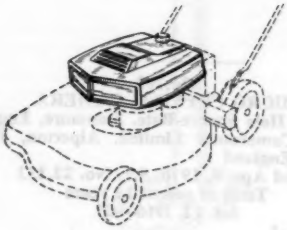


226,772
TOY FIGURE
Hans Gustav Ehrenreich, Stilling, Denmark 8363
Filed June 13, 1972, Ser. No. 262,251
Claims priority, application Denmark Mar. 13, 1972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AD

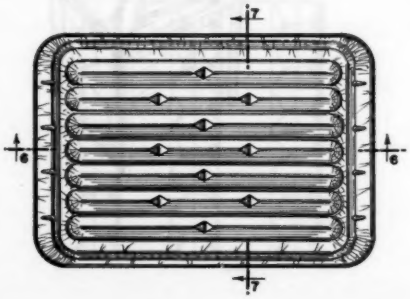


226,773
TOY FIGURE
Hans Gustav Ehrenreich, Stilling, Denmark 8363
Filed June 13, 1972, Ser. No. 262,252
Claims priority, application Denmark Mar. 13, 1972
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AD

226,774
MOWER SHROUD
Robert A. Skyer, Palatine, and George E. Bowman, Country Club Hills, Ill., assignors to International Harvester Company, Chicago, Ill.
Filed Jan. 31, 1972, Ser. No. 222,443
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D40—1 A

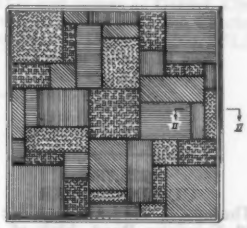


226,775
BROILER PAN
Robert A. Jones, Louisville, Ky., assignor to Anaconda Aluminum Company
Filed June 10, 1971, Ser. No. 152,014
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—1 J



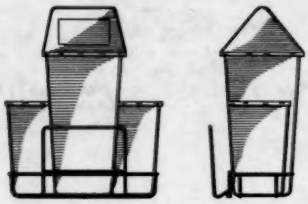
226,776
CONTAINER FOR FOODSTUFFS
Gerald E. Mider, 783 Wiltshire Road, Columbus, Ohio 43204
Filed Sept. 23, 1971, Ser. No. 183,303
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—1 B

226,777
COLOR DISPLAY SCREEN
Robert Bruce McClure, R.D. 2, P.O. Box 290, Chester, Pa. 19355
Filed July 12, 1971, Ser. No. 161,371
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 A

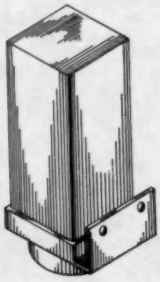


226,778
LUMINAIRE
Charles P. Breed, Alexandria, Va., and Melvin R. Anderson, Avon Lake, Ohio, assignors to Westinghouse Electric Corporation
Filed Dec. 5, 1969, Ser. No. 20,377
Term of patent 14 years
Int. Cl. D26—*03, 05*
U.S. Cl. D48—31

226,779
COMBINED TRASH RECEPTACLE AND HOLDER THEREFOR
Loryn B. Deane and Edward V. Deane, both of 18 Overlook Road, Ardsley, N.Y. 10502
Filed Mar. 24, 1972, Ser. No. 238,007
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D49—32

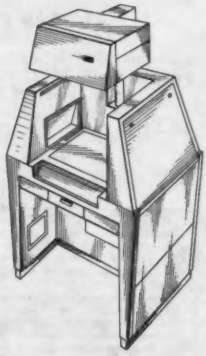


226,780
CUP DISPENSER
Thomas W. Thompson, 6211 Chicago St.; and M. Bruce Martin, 220 Fairacres Road, both of Omaha, Nebr. 68132; and Thomas E. Ludwick, 2700 O'Reilly Drive, Lincoln, Nebr. 68500
Filed Sept. 21, 1970, Ser. No. 25,082
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D52—2 B

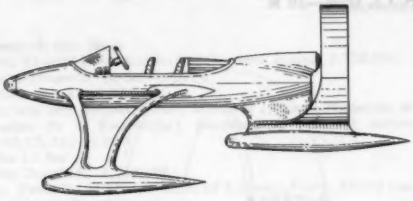


226,781
SERRATED RULER
Barkere Boodakian, 5743 Lexington Ave., Los Angeles, Calif. 90038
Filed Sept. 16, 1970, Ser. No. 25,026
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6

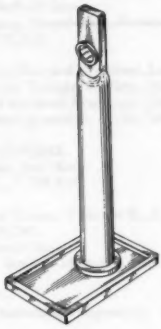
226,782
MICRO COPYING CAMERA
Harry Arthur Hele Spence-Bate, Stanmore, England, assignor to Cameronics Limited, Alperton, Wembley, Middlesex, England
Filed Apr. 8, 1970, Ser. No. 22,333
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



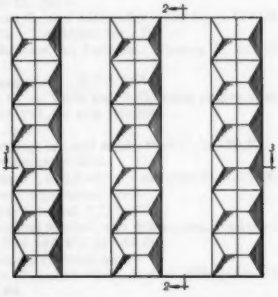
226,783
HYDROPLANE
Paul M. Lewis, P.O. Box 651, Sidney, Nebr. 69162
Filed Aug. 6, 1971, Ser. No. 169,887
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D71—1 W



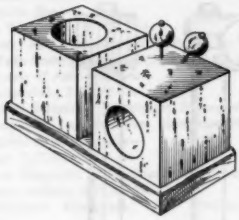
226,784
ROAD DELINEATOR
John W. Duckett, Tiburon, Edward A. Brooks, Jr., Novato, and Clarke Reynolds, Tiburon, Calif., assignors to American Molded Products, Ltd., Sausalito, Calif.
Filed Sept. 2, 1970, Ser. No. 24,811
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1 J



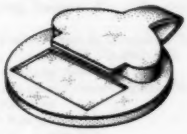
226,785
REFLECTOR
Robert I. Nagel, 3729 Roth Terrace, Skokie, Ill. 60076
Filed Oct. 26, 1971, Ser. No. 192,691
Term of patent 14 years
Int. Cl. D29—*99;* D26—*05*
U.S. Cl. D72—1 E



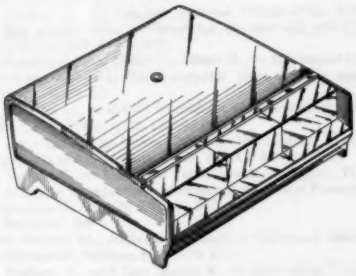
226,786
HOLDER FOR PENCILS, PAPERS, AND THE LIKE
Melvin K. Bolling, 2nd Ave., Holland, Ind. 47541
Filed July 30, 1971, Ser. No. 167,891
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5 A



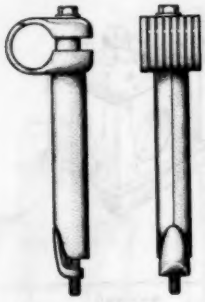
226,787
AUTOCLAVABLE PROSTHESIS CONTAINER
David L. Walchle and James L. Geraci, Cincinnati, Ohio, assignors to Xomox Corporation, Cincinnati, Ohio
Filed May 8, 1972, Ser. No. 251,559
Term of patent 14 years
Int. Cl. D24—*99*
U.S. Cl. D83—1 W



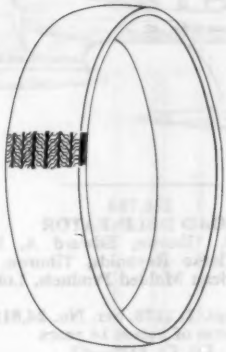
226,788
HAIR CURLER HEATING CABINET
Jacob A. Krapowicz, Ridgefield, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed May 28, 1971, Ser. No. 148,293
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 E



226,789
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Aug. 13, 1971, Ser. No. 171,794
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D90—9



226,790
PNEUMATIC TIRE TREAD AND BUTTRESS COMBINATION
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Term of patent 14 years
Filed Nov. 23, 1971, Ser. No. 201,605
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF APRIL, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & M Research, Inc.: *See—*
Everett, Thorald E. Montague; and Charipar, Joseph, 3,728,954.

A/S Grorud Jernvarefabrik: *See—*
Johansen, Jan, 3,728,758.

Abadie, Albert; and Roques, Henri, to Anvar (Agence Nationale de Valorisation de la Recherche). De-oiling of polluted waters. 3,729,410, Cl. 210-32.000.

Abbot, John L.: *See—*
Shaffer, Donald H., 3,729,198.

Abernathy, David D., to United States of America, Navy. Aimed warhead. 3,728,964, Cl. 102-2.000.

Abex Corporation: *See—*
Coakley, James L., 3,728,860.

Abilock, Solomon: *See—*
Shottenfeld, Richard; and Abilock, Solomon, 3,729,635.

ACF Industries, Incorporated: *See—*
Natho, Paul J.; and Vicari, Felix J., 3,729,168.

Addressograph-Multigraph Corporation: *See—*
Gunto, Robert L.; and Staley, Merton R., 3,729,257.

Advenier, Pierre: *See—*
Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., 3,728,989.

Aerojet-General Corporation: *See—*
Grakauskas, Vytautas, 3,729,504.

Aerpat A.G.: *See—*
Rigot, Robert M.; and Goettling, Douglas B., 3,728,882.

Agfa-Gevaert Aktiengesellschaft: *See—*
Himmelmann, Wolfgang; Bergthaller, Peter; Quiring, Bernd; and Wagner, Kuno, 3,729,318.

Agfa-Gevaert N.V.: *See—*
De Schrijver, Frans Carolus; and Leenders, Luc, 3,729,405.

Ahearn, William E.; Almasi, George Stanley; and Genovese, Eugene Ronald, to International Business Machines Corporation. High-density magneto-optic readout apparatus. 3,729,724, Cl. 340-174.0yc.

Air Balance, Inc.: *See—*
Tarnoff, Sherwin S., 3,729,043.

Air Products and Chemicals, Inc.: *See—*
Longsworth, Ralph C., 3,728,868.

Airco Inc.: *See—*
Kennedy, Kurt D.; and Turner, Maurice E., 3,729,046.
Terrell, Ross C., 3,729,567.

Aisin Seiki Company Limited: *See—*
Okamoto, Tosiaki; Inada, Masami; and Takayama, Katuki, 3,729,236.

Akamatsu, Kagesumi: *See—*
Yoshida, Fujio; Akamatsu, Kagesumi; and Hara, Nobito, 3,729,297.

Aktiebolaget Electrolux: *See—*
Furnell, Dennis Leslie, 3,729,275.

Aktiebolaget Leo (A/B Leo): *See—*
Hagerman, Gosta Lund, 3,729,560.

Aktiengesellschaft Adolph Saurer: *See—*
Heck, Friedrich, 3,729,292.

Albright & Wilson Limited: *See—*
Lyde, Derek Martin, 3,729,393.

Alcan Research and Development Limited: *See—*
Collins, Donald Louis William; and Gillett, Brian Arthur, 3,729,097.

Alexander, Alan G.: *See—*
Wolfe, Keinz K.; and Alexander, Alan G., 3,729,064.

Allegheny Ludlum Industries, Inc.: *See—*
Kedzior, Edward S.; Latham, Thomas J., Jr.; and Boris, John, 3,729,124.
Santoli, Pasquale A., 3,728,884.

Allen, Clifford H., to TRW Inc. Adjustable rotary vane tangency compressor. 3,729,277, Cl. 418-107.000.

Allen, Paul T.: *See—*
Grandio, Philip, Jr.; and Allen, Paul T., 3,729,523.

Allen-Bradley Company: *See—*
Callan, John E.; and Freitag, Lawrence F., 3,729,657.

Allied Chemical Corporation: *See—*
Rast, Gustav Edward, 3,729,458.

Allinquant, Fernand Michel; and Allinquant, Jacques Gabriel. Suspension strut. 3,729,184, Cl. 267-64.00r.

Allinquant, Jacques Gabriel: *See—*
Allinquant, Fernand Michel; and Allinquant, Jacques Gabriel, 3,729,184.

Allum, Keith George, to British Petroleum Company Limited, The. Silica containing catalyst preparation. 3,729,428, Cl. 252-454.000.

Almasi, George Stanley: *See—*
Ahearn, William E.; Almasi, George Stanley; and Genovese, Eugene Ronald, 3,729,724.

Altamil Corporation: *See—*
Farnsworth, William J., 3,729,111.

Altenburger, Otto; and Bansemir, Robert H., to Stromberg-Carlson Corporation. Path finding system. 3,729,593, Cl. 179-18.0ea.

Aluminum Company of America: *See—*
Goheen, Richard H., 3,729,542.

American Chemical & Refining Company, Incorporated: *See—*
Browning, Myron E.; and Solidum, Hamilton M., 3,729,396.

American Cyanamid Company: *See—*
Glick, Arthur, 3,728,839.
L'Eplattenier, Francois; and Calderazzo, Fausto, 3,729,512.
Semp, Bernard Albert, 3,728,739.
Stockel, Richard Frederick; and Herbes, William Frank, 3,729,516.
Zweig, Arnold; and Maulding, Donald Roy, 3,729,426.

American Danish Oticon A/S (Aktienselskabet William Demant): *See—*
Berland, Ole, 3,729,588.

American Metal Climax, Inc.: *See—*
Sukolics, Ronald D., 3,729,354.

American Optical Corporation: *See—*
Berkovits, Barough V., 3,729,008.
Carpenter, George J., 3,729,356.
Norton, Frederick H., 3,729,299.

American Optical Corporation, mesne: *See—*
Snitzer, Elias, 3,729,690.

American Seating Company: *See—*
Barecki, Chester J., 3,729,226.

American Standard, Inc.: *See—*
Gerken, Carl F., 3,729,044.
Konen, Thomas P.; and Smith, Robert W., 3,728,746.

American Sterilizer Company: *See—*
Brendgord, Thomas; Strasser, Klaus G.; and Wehrenberg, Jon W., 3,728,745.

Ames, Ward A., to Tridan Tool & Machine, Inc. Tube bending and sawing apparatus. 3,728,885, Cl. 72-294.000.

Amoco Production Company: *See—*
Bearden, William G.; and Powers, Charles A., 3,729,337.
Farr, John B., 3,729,704.
Froning, H. R., 3,729,053.
Strashok, Donald T., 3,729,287.

AMP Incorporated: *See—*
Paullus, Clarence Leonard, 3,728,981.

AMP Incorporated, mesne: *See—*
Smith, Philip Sydney, 3,729,701.

Ampoules, Inc.: *See—*
Hurschman, Alfred A., 3,729,003.

AMSTED Industries Incorporated: *See—*
Mulcahy, Harry William, 3,729,214.

Anaconda Company, The: *See—*
Grunig, James K.; Anderson, Rodney J.; and Vance, Bess L., 3,729,541.

Andersen, Eugene F.: *See—*
Eby, Jack A.; and Andersen, Eugene F., 3,728,749.

Andersen, Jens Nicolai, to Danfoss A/S. Pressure-responsive electric switch. 3,729,605, Cl. 200-83.00p.

Anderson, Deyrol E., to Display Systems Corporation. Computer assisted dial access video retrieval for an instructional television system. 3,729,581, Cl. 178-6.800.

Anderson, Gordon C.; and Harmon, Albert D., to Maremont Corporation. Servicing assembly for automatic yarn piecing apparatus. 3,728,852, Cl. 57-34.00r.

Anderson, Howard L., to BASF Wyandotte Corporation. Liquid level control device. 3,729,013, Cl. 137-93.000.

Anderson, John Erling, to Union Carbide Corporation. Solid refuse disposal process and apparatus. 3,729,298, Cl. 48-111.000.

Anderson, Robert F., to Universal Oil Products Company. Hydrogen fluoride stripping to separate hydrocarbon and alkyl fluorides in alkylation process. 3,729,526, Cl. 260-683.480.

Anderson, Robert I.: *See—*
Conklin, Robert M.; Anderson, Robert I.; Gautraud, Michael G.; and Shimanski, William H., 3,729,315.

Anderson, Rodney H.; and Day, Ralph R., to Caterpillar Tractor Co. Parking brake control with transmission interlock. 3,729,074, Cl. 192-4.00c.

Anderson, Rodney J.: *See—*
Grunig, James K.; Anderson, Rodney J.; and Vance, Bess L., 3,729,541.

Ando, Ryo; Fukushima, Tsutomu; Bando, Masayoshi; and Honda, Akira, to Nippon Kokan Kabushiki Kaisha. Apparatus for refining molten iron and molten iron alloys. 3,729,183, Cl. 226-34.00a.

Andolino, Joseph P. Bowling glove. 3,728,738, Cl. 2-161.00a.

Andra, Wolfhart; Beyer, Erwin; Leonhard, Fritz; Thul, Heribert; and Winter-Gerst, Louis, to Gutehoffnungshutte Sterkrade Aktiengesellschaft. Bearings for bridges and similar structures. 3,728,752, Cl. 14-16.000.

Andres, Rudolf, to Daimler-Benz Aktiengesellschaft. Lock arrangement for a door of a motor vehicle. 3,729,220, Cl. 292-336.300.

Andress, Harry J., Jr.; and Ashjian, Henry, to Mobil Oil Corporation. Reaction products of an amine and a methyl vinyl ether-maleic anhydride copolymer. 3,729,452, Cl. 260-78.0ua.

Andress, Harry J., Jr., to Mobil Oil Corporation. Reaction products of amine derivatives of 1-olefin/maleic anhydride copolymers and methyl vinyl ether-maleic anhydride copolymers as anti-static agents. 3,729,529, Cl. 260-897.00b.

Anner, Georg; and Wieland, Peter, to Ciba-Geigy Corporation. 21-Fluoro derivatives of 3β-hydroxy-Δ4,6-halo-20-oxo pregnadienes. 3,729,466, Cl. 260-239.55d.

Antal, Sandor: *See—*
Horvath, Laszlo; Gundisch, Gusztav; Arvai, Mihaly; and Antal, Sandor, 3,729,028.

Anvar (Agence Nationale de Valorisation de la Recherche): *See—*
Abadie, Albert; and Roques, Henri, 3,729,410.

A.P.C. Industries, Inc.: *See—*
Pence, Albert L.; and Smith, Van Zandt, 3,728,770.

Apt Controls Limited: *See—*
Stone, Roger Geoffrey, 3,729,617.

Aqua-Chem, Inc.: *See—*
Goeldner, Richard W., 3,729,383.

Araki, Kazumi: *See—*
Nakayama, Kiyoshi; and Araki, Kazumi, 3,729,381.

Argelich, Termes y Ca: *See—*
Trullas, Isidro Folch, 3,728,878.

Argeris, John G.; and Atwood, James A., III. Mop head. 3,728,756, Cl. 15-229.00a.

Armour-Dial, Inc.: *See—*
Jungermann, Eric; and Reich, Henry E., 3,729,532.

Arn Kiekert Sohne: *See—*
Goldbach, Horst; Brandenburg, Rudolf; and Dabringhausen, Erich, 3,728,819.

Arnett, Gene L.; and Dunlap, William B., to Monsanto Company. Method for preparing low color polyphenyls and halogenated polyphenyls. 3,729,522, Cl. 260-674.00r.

Arnold, Arthur A., to United States of America, Navy. Self-aligning, adjustable anchor pin assembly. 3,729,238, Cl. 308-72.000.

Arulpragasam, Jeganandaraj A.; Minshull, John F.; and Murphy, Alan S., to International Business Machines Corporation. Input/output channel. 3,729,716, Cl. 340-172.500.

Arvai, Mihaly: *See—*
Horvath, Laszlo; Gundisch, Gusztav; Arvai, Mihaly; and Antal, Sandor, 3,729,028.

Asam, Edward F., to Texas Instruments, Incorporated. Range tracking system for use in an independent aircraft landing monitor. 3,729,737, Cl. 343-7.300.

Ash, Arthur B.: *See—*
Steinberg, George M.; Lieske, Claire N.; Ash, Arthur B.; and Blumbergs, Peter, 3,729,558.

Ash Stevens, Inc.: *See—*
Steinberg, George M.; Lieske, Claire N.; Ash, Arthur B.; and Blumbergs, Peter, 3,729,558.

Ashjian, Henry: *See—*
Andress, Harry J., Jr.; and Ashjian, Henry, 3,729,452.

Ashland Oil, Inc.: *See—*
Robin, Michael; and Schulte, Sheldon, 3,729,471.

Atwood, James A., III: *See—*
Argeris, John G.; and Atwood, James A., III, 3,728,756.

Augris, Rene; and Beyer, Jacques, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Control and identification device. 3,729,709, Cl. 340-169.000.

Augustin, Gustav, to Kupfer Asbest Co. Sealing sleeve, especially for radial shaft sealing rings. 3,729,204, Cl. 277-134.000.

Austin, Peter William; and Crabtree, Allan, to Imperial Chemical Industries Limited. Certain 3-acetamido or 3-benzamido-6-hydroxy-2-1-H-pyridones. 3,729,476, Cl. 260-295.50a.

Automatic Electric Laboratories, Inc.: *See—*
Foster, James H.; and Dufton, John Peter, 3,729,711.

Automatic Switch Co., mesne: *See—*
Beeken, Basil B.; and O'Keefe, Robert F., 3,729,702.

Automatic Switch Company: *See—*
Wiktor, Dominik M., 3,729,608.

Automibiles Peugeot: *See—*
Piret, Jean, 3,729,075.

Automobiles Peugeot: *See—*
Bertrand, Bernard; and Lesueur, Claude, 3,728,992.
Piret, Jean, 3,728,910.

Avco Corporation: *See—*
Schramm, George R., 3,728,995.

Averill, Robert G.; and Khowaylo, Alex, to Howmedica, Inc. Knee or elbow prosthesis. 3,728,742, Cl. 3-1.000.

Aviak, Charles: *See—*
Charle, Roger; Aviak, Charles; and Kalopisais, Gregoire, 3,729,569.

Avions Marcel Dassault Vaucresson: *See—*
DePlante, Henri, 3,729,154.

Avon Products, Inc.: *See—*
Gleicher, Joseph, 3,729,011.

Baar, Michel Armand Rene Alfred, to Compagnie Internationale des Pieux Armes Frankignoul, Societe Anonyme. Device for forming continuous walls, by means of consecutive, reinforced-concrete panels. 3,729,164, Cl. 249-10.000.

Bach, Lloyd G.; and Lewis, Richard L., to Bendix Corporation, The. Integrated brake booster and adaptive braking modulator. 3,729,235, Cl. 303-21.00f.

Bachle, Carl F., to Teledyne Industries, Inc. Exhaust port structure. 3,728,994, Cl. 123-188.0gc.

Bachmann, Gerhard; and Marx, Matthias, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Cathodically depositable coating materials. 3,729,435, Cl. 260-18.0ep.

Bachmann, Horst, to Langenstein & Schemann Aktiengesellschaft. Electric upsetting machine. 3,728,887, Cl. 72-318.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Bachmann, Gerhard; and Marx, Matthias, 3,729,435.
Merger, Franz; Fuchs, Werner; Duembgen, Gerd; and Oberhansberg, Joachim, 3,729,506.

Baer, Robert B.: *See—*
Weinstein, Martin; Spfirs, Kenneth K.; and Baer, Robert B., 3,729,295.

Bagheri, Mansour A. H.: *See—*
Stillman, Donald W.; and Bagheri, Mansour A. H., 3,728,750.

Bagprint Ltd.: *See—*
Kleinhaut, Samuel, 3,729,127.

Bahnsen, Erwin B., to Steiner American Corporation. Apparatus for preparing wash solution. 3,729,174, Cl. 259-7.000.

Baker, Joseph W.; and Schumacher, Ignatius, to Monsanto Company. N-Pentachlorophenoxy-methyl-n-hydrocarbon-amines. 3,729,511, Cl. 260-570.700.

Balda-Werke: *See—*
Lange, Karl-Heinz, 3,728,950.

Baldwin, Brian E.: *See—*
Tischlinger, Edward A.; and Baldwin, Brian E., 3,729,032.

Baldwin, Brian E., to MPL Inc. Liquid dispenser and flanger and method and apparatus for filling same. 3,729,031, Cl. 141-2.000.

Balfanz, Thomas L.: *See—*
Farrell, John C.; and Balfanz, Thomas L., 3,729,034.

Band, Ian T., to Hewlett-Packard Company. Gate control apparatus for setting the input signal counting interval. 3,729,677, Cl. 324-78.00d.

Bando, Masayoshi: *See—*
Ando, Ryo; Fukushima, Tsutomu; Bando, Masayoshi; and Honda, Akira, 3,729,183.

Banks, Robert L.; and Pennella, Filippo, to Phillips Petroleum Company. Disproportionation process. 3,729,525, Cl. 260-683.00d.

Bansemir, Robert H.: *See—*
Altenburger, Otto; and Bansemir, Robert H., 3,729,593.

Barbieri, Frank. Safety apparatus for garbage trucks. 3,729,106, Cl. 214-83.300.

Barclay, Allan Sangster, to Steel Company of Canada, Limited, The. Ballistic shape punch and screw head socket. 3,728,892, Cl. 72-476.000.

Bardsley, Robert F.: *See—*
Linn, Stephen; and Bardsley, Robert F., 3,729,327.

Bare, Howard J. Flexible tubing with integral end clamps. 3,729,027, Cl. 138-109.000.

Barecki, Chester J., to American Seating Company. Single pedestal transit chair. 3,729,226, Cl. 297-232.000.

Barefoot, Carlton Keith. Apparatus for retreading tires. 3,729,358, Cl. 156-394.000.

Barient Company: *See—*
Guangorena, Jesus; and Kaila, Edward, 3,728,914.

Barker, Michael D.; and Kirby, Peter, to Shell Oil Company. Insecticidal compositions and methods of combatting insects using phosphorylated 1,2,5-thiadiazoles. 3,729,557, Cl. 424-200.000.

Barnett, Thomas G. Baseball practice device. 3,729,194, Cl. 273-26.00e.

Barney, Jan Alan. Modular slidable member and mounting bracket combination. 3,729,242, Cl. 312-107.000.

Barrett, Charles D., Jr., to Burdett Oxygen Co. of Cleveland, Inc. Cryogenic deflashing apparatus and operating system for same. 3,728,825, Cl. 51-164.000.

BASF Wyandotte Corporation: *See—*
Anderson, Howard L., 3,729,013.
Lozo, William, 3,729,422.
Otrhalek, Joseph V., 3,729,411.

Baskerville, Ralph J.; and Yen, Patrick P., to General Electric Company. Means for charging a stored energy circuit breaker closing device. 3,729,065, Cl. 185-39.000.

Baxter Laboratories, Inc.: *See—*
Louderback, Allan L., 3,729,427.

Baxter Laboratories, Incorporated: *See—*
Leonard, Ronald J., 3,729,377.

Bayer Aktiengesellschaft: *See—*
Haberland, Ulrich; Lenz, Gunther; Schell, Hermann; and Weirauch, Kurt, 3,729,447.

Bayerkohler, Weldon S., to Scheppmann, A. F., & Son Mfg. Co. Compact portable tire servicing device. 3,729,033, Cl. 141-231.000.

Beal, Philip F., III; and Pike, John E., to Upjohn Company, The. Prostanoic acid derivatives. 3,729,502, Cl. 260-468.00d.

Beans, Allen F.; Eddowes, Alfred M.; Gagliardi, Richard P.; and Koos, Edward E., to United States of America, Navy. Instantaneous frequency diversity radar system. 3,729,739, Cl. 343-17.10r.

Beanstalk Shelving Limited: *See—*
James, David Maldon, 3,728,802.

Bearden, William G.; and Powers, Charles A., to Amoco Production Company. Production of petroleum from unconsolidated formations. 3,729,337, Cl. 117-98.000.

Beasom, James Douglas, to Radiation Incorporated. Semiconductor Device. 3,729,661, Cl. 317-235.00r.

Beatrice Foods Co.: *See—*
Kasik, Robert L., 3,729,326.

Beatrice Foods Company: *See—*
Keyes, Richard Martin; and Herramann, William Christian, 3,729,177.

Beaunit Corporation: *See—*
Ragep, Gazie K., 3,729,336.

Beazley, Phillip M.; and Norton, Charles J., to Marathon Oil Company. Purification of alkane sulfonate products. 3,729,507, Cl. 260-513.00b.

BEC Products, Inc., mesne: *See—*
Dageford, Ernest C., 3,729,735.

Beck, Jacob Howard, to BTU Engineering Corporation. Modular heater furnace. 3,729,570, Cl. 13-25.000.

Beckman Instruments, Inc.: *See—*
Cosgrove, Richard Elmond, II; and Mask, Charles Arnold, 3,729,401.

Beckman, Richard K.; and Spangler, Burton H. Audio-visual teaching unit. 3,728,801, Cl. 35-60.000.

Beckwith, Merton M.: *See—*
Hsu, Grace F.; and Beckwith, Merton M., 3,729,394.

Beckwith, Robert C.; and Hecker, Robert W., Jr., to Rite-Hite, mesne. Dockboard. 3,728,753, Cl. 14-71.000.

Becton Dickinson and Company: *See—*
Shaffer, George Raymond; and Roz, Eugene M., 3,729,382.

Beduchaud, Michel, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Optical scanning assembly with helical-shaped rotating reflector. 3,729,248, Cl. 350-7.000.

Beeken, Basil B.; and O'Keefe, Robert F., to Automatic Switch Co., mesne. Acoustic sensing device. 3,729,702, Cl. 340-1.00r.

Behlen Manufacturing Company, Inc.: *See—*
Behlen, Walter D.; and Hilger, Anthony G., 3,728,779.

Behlen, Walter D.; and Hilger, Anthony G., to Behlen Manufacturing Company, Inc. Method of joining strip material. 3,728,779, Cl. 29-432.000.

Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, to Siemens Aktiengesellschaft. Process for the production of capacitors. 3,728,765, Cl. 29-25.420.

Beiersdorf Aktiengesellschaft: *See—*
Lehmann, Horst; and Curts, Julius, 3,729,338.

Beiswinger, Wayne J.; and Witte, Walter R., to Verta-Tronics, Inc. Electro-mechanical oscillator of electrodynamical and electromagnetic types. 3,729,691, Cl. 331-116.00m.

Belke, Jack T.: *See—*
Claflin, Hyle K.; and Belke, Jack T., 3,729,212.

Bell & Howell Company: *See—*
Engelstein, Stanley; and Dorman, Isidore, 3,729,094.

Bell, Russell N., to Stauffer Chemical Company. Cheese emulsifying agent. 3,729,546, Cl. 423-306.000.

Bell, Steven A., to Puritan-Bennett Corporation. Compliance compensated ventilation system. 3,729,000, Cl. 128-145.600.

Bell Telephone Laboratories, Incorporated: *See—*
Bobeck, Andrew Henry, 3,729,726.
Condon, Joseph Henry, 3,729,695.
Saul, Robert H., 3,729,348.

Bendix Corporation, The: *See—*
Bach, Lloyd G.; and Lewis, Richard L., 3,729,235.
Borkowski, Donald F., 3,729,072.
Brown, Arthur K., Jr., 3,728,942.
Klein, Bruce W.; and Turak, John L., 3,729,069.
Ludwig, George C., 3,729,132.
MacDuff, Stanley I., 3,729,169.
McGill, Robert L., Jr.; Worsham, Charles R.; and Green, Norman, 3,729,587.
Royadjieff, George I.; and Verge, Kenneth W., 3,729,276.
Shimrony, Yoram, 3,729,273.
Silvestrini, Richard L., 3,729,025.

Benedict, Herbert: *See—*
Green, Edward H.; and Benedict, Herbert, 3,729,116.

Bennett, Roger; and Clelford, Anthony Peter, to Westinghouse Brake English Electric. Multi-terminal semiconductor devices having pressure contacts for main and gate electrodes. 3,729,659, Cl. 317-234.00r.

Benzing, Hugo, OHG: *See—*
Benzing, Peter; Klein, Richard; and Trampisch, Alfred, 3,729,093.

Benzing, Peter; Klein, Richard; and Trampisch, Alfred, to Benzing, Hugo, OHG. Dispenser for C-washers and the like and washer package for use with the dispenser. 3,729,093, Cl. 206-65.00r.

Beregi, Laszlo; Hugon, Pierre; and Laubie, Michel, to Societe en Nom Collectif "Science Union et Cie, and Societe Francaise de Recherche Medicale". 1-(3-Sulfomoyl-4-chloro-benzomido)-3-(2-furyl)-pyrrolidine. 3,729,484, Cl. 260-326.300.

Berezin, Gilbert H., to Du Pont de Nemours, E. I., and Company. Tricyclo[4.3.1.1 3,8]-undecane-4-one. 3,729,513, Cl. 260-586.00a.

Berger, Abe, to General Electric Company. Disilyl-containing compounds. 3,729,496, Cl. 260-448.80r.

Bergthaller, Peter: *See—*
Himmelmann, Wolfgang; Bergthaller, Peter; Quiring, Bernd; and Wagner, Kuno, 3,729,318.

Berkovits, Barough V., to American Optical Corporation. Electrode for atrial pacing with curved end for atrial wall engagement. 3,729,008, Cl. 128-418.000.

Berland, Ole, to American Danish Oticon A/S (Aktienselskabet William Demant). Transistorized amplifier. 3,729,588, Cl. 179-1.00a.

Berlincourt, Don A.; and Horvath, David J., to Vernitron Corporation. Piezoelectrically ignited gas burner with dual purpose electrode. 3,729,288, Cl. 431-264.000.

Bernauer, Karl; Borgulya, Janos; and Bohni, Erika, to Hoffmann-La Roche Inc. Naphthoquinone derivatives. 3,729,492, Cl. 260-396.00r.

Bernheim, Willy; and Deiner, Hans, to Chemische Fabrik Pfersee GmbH. Process for the production of concentrated aqueous emulsions or insoluble liquid, pasty or solid organic or inorganic substances. 3,729,437, Cl. 260-29.2ep.

Bertolacini, Ralph J.: *See—*
Gutberlet, Louis C.; Bertolacini, Ralph J.; and Brennan, Harry M., 3,729,521.

Bertrand, Bernard; and Lesueur, Claude, to Automobiles Peugeot and Regie Nationale des Usines Renault. Adjustable jet and its application in an apparatus for recycling the exhaust gases of an internal combustion engine. 3,728,992, Cl. 123-119.00a.

Best Lock Corporation: *See—*
Best, Walter E., 3,728,879.

Best, Walter E., to Best Lock Corporation. Heavy cable shackle padlock. 3,728,879, Cl. 70-38.00r.

Bey, Alvin E.; and Heffel, James R., to Dow Corning Corporation. Carboxyfunctional silicones. 3,729,444, Cl. 260-46.50e.

Beyer, Erwin: *See—*
Andra, Wolfhart; Beyer, Erwin; Leonhard, Fritz; Thul, Heribert; and Winter-Gerst, Louis, 3,728,752.

Beyer, Jacques: *See—*
Augris, Rene; and Beyer, Jacques, 3,729,709.

Bieber, William J. Dual-mode shifter for automatic transmissions. 3,728,908, Cl. 74-473.00r.

Bijasiewicz, Tadeusz M.; and Somerhalder, Robert A., to Wean United, Inc. Design of rotary strip accumulator. 3,729,144, Cl. 242-55.000.

Bilow, Norman; and Landis, Abraham L., to Hughes Aircraft Company. Method of preparing polyarylene polymers with alkyl amino aromatics, compositions thereof and products. 3,729,433, Cl. 260-2.00h.

Bird, Walter W., to Birdair Structures, Inc. Square ended air inflated structures. 3,728,831, Cl. 52-2.000.

Birdair Structures, Inc.: *See—*
Bird, Walter W., 3,728,831.

Blackaby, Wilmur B.: *See—*
Swanson, Dale A.; and Blackaby, Wilmur B., 3,729,197.

Blakeslee, Sherley E. Tube cutter assembly. 3,728,790, Cl. 30-92.500.

Blattel, Thomas V.: *See—*
Tegt, Richard P.; Robertson, Douglas G.; and Blattel, Thomas V., 3,729,598.

Blatter, Herbert Morton: *See—*
Rosen, Melvin Harris; and Blatter, Herbert Morton, 3,729,487.

Blecke, Ronald G.; and Hill, Robert W., to Gulf Research & Development Company. Process for copolymerization of maleic anhydrid with 1-olefins. 3,729,451, Cl. 260-78.500.

Bleil, Carl E., to General Motors Corporation. Method for growing crystals from molten melts saturated with crystalline material. 3,729,291, Cl. 23-301.0sp.

Bljum, Grigory Zakharovich: *See—*
Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bljum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna, 3,729,540.

Blumbergs, Peter: *See—*
Steinberg, George M.; Lieske, Claire N.; Ash, Arthur B.; and Blumbergs, Peter, 3,729,558.

Bobeck, Andrew Henry, to Bell Telephone Laboratories, Incorporated. Single wall domain arrangement. 3,729,726, Cl. 340-179.0tf.

Boehringer Ingelheim G.m.b.H.: *See—*
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; and Schromm, Kurt, 3,729,474.

Bogert, Ernest H., to General Electric Company. Electric circuit breaker with means for promoting current transfer to arcing contacts. 3,729,606, Cl. 200-146.00r.

Bohni, Erika: *See—*
Bernauer, Karl; Borgulya, Janos; and Bohni, Erika, 3,729,492.

Bohnlein, Friedrich; and Stollmann, Georg, to Idra-Pressen G.m.b.H. Die-casting machine. 3,729,047, Cl. 164-150.000.

Bonaldi, Giacomo M. Ventilating apparatus. 3,729,271, Cl. 415-148.000.

Bonsky, Elmer C.; and Curtis, Lawrence A., to T.A.D. Avanti, Inc. Adapter unit for telephone answering instrument. 3,729,589, Cl. 179-6.00r.

Boots Pure Drug Company Limited: *See—*
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,729,565.

Borgulya, Janos: *See—*
Bernauer, Karl; Borgulya, Janos; and Bohni, Erika, 3,729,492.

Boris, John: *See—*

Kedzior, Edward S.; Latham, Thomas J., Jr.; and Boris, John, 3,729,124.

Borkowski, Donald F., to Bendix Corporation, The. Brake adjuster. 3,729,072, Cl. 188-196.00p.

Bortz, Milton H. Football slide rule. 3,729,130, Cl. 235-70.00r.

Bosch, Robert, G.m.b.H.: *See*—
Eckert, Konrad; Knapp, Heinrich; Sautter, Wilfried; and Stein, Volkhard, 3,728,993.
Engfer, Ortwin, 3,729,211.

Boshagen, Horst; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. Hydroquinoline thiocarbamic acid derivatives. 3,729,473, Cl. 260-283.00s.

Bosley, Denis V.: *See*—
Cook, John S.; and Bosley, Denis V., 3,729,134.

Bourrel, Jean; Remond, Maurice; Potie, Noel; and Lagacherie, Guy, to Societe Nationale des Gas du Sud-Quest and Compagnie des Fours Industries. Heated revolving drum. 3,729,180, Cl. 432-228.000.

Boutle, David Leonard: *See*—
Cunningham, Victor Ralph; Dagenham, Dock; and Boutle, David Leonard, 3,729,538.

Bouvier, Daniel, to S.T. Dupont. Cigarette lighter. 3,729,289, Cl. 431-344.000.

Box Innards, Inc.: *See*—
Peters, Charles L., 3,728,925.

Boxell, Alan James: *See*—
Solomon, Nigel Allan; Godfrey, Nelson Frederick John; and Boxell, Alan James, 3,729,600.

Boyns, Jerry E., to United States of America, Navy. Simultaneous sum and difference pattern technique for circular array antennas. 3,729,742, Cl. 343-854.000.

Boyriven, Paul, to Compagnie Industrielle de Mecanismes. Electrical window regulator mechanism. 3,728,904, Cl. 74-89.150.

Boyum, Oystein; Folkestad, Finn Enok; and Torvund, Asbjorn, to Norsk Hydro A.S. Process for the purification of aqueous magnesium chloride solutions. 3,725,550, Cl. 423-497.000.

Bracke, William J. I., to Cosden Oil & Chemical Company. Synthesis of dialkaryl sulfone. 3,729,517, Cl. 260-607.00a.

Brambilla, Guido; and Fogliacco, Vittorio, to RIV-SKF Officine di Villar Perosa S.p.A. Damper device for railway vehicle automatic couplings. 3,729,101, Cl. 213-45.000.

Brandelli, Anthony R. Flow-control device. 3,729,017, Cl. 137-414.000.

Brandenburg, Rudolf: *See*—
Goldbach, Horst; Brandenburg, Rudolf; and Dabringhausen, Erich, 3,728,819.

Brannan, Jack D. Household rubbish reduction system. 3,728,977, Cl. 110-8.00r.

Brantley, Jerry K., to Caterpillar Tractor Co. Flexible strap wrench. 3,728,916, Cl. 81-64.000.

Braun, Norman: *See*—
Gold, David; Misek, Bernard; and Braun, Norman, 3,729,553.

Braunwarth, John B.: *See*—
Sanders, Herbert L.; and Braunwarth, John B., 3,729,420.

Brendgord, Thomas; Strasser, Klaus G.; and Wehrenberg, Jon W., to American Sterilizer Company. Scrub sink. 3,728,745, Cl. 4-166.000.

Brennan, Harry M.: *See*—
Gutberlet, Louis C.; Bertolacini, Ralph J.; and Brennan, Harry M., 3,729,521.

Brenter, Erich. Snow runner. 3,729,208, Cl. 280-16.000.

Brette, Yves-Jean Francois, to Societe Industrielle Honeywell Bull (Societe Anonyme). Apparatus for controlling the displacement of an object between any two points. 3,729,668, Cl. 318-561.000.

Bride, John Edwin, to Du Pont de Nemours, E. I., and Company, mesne. Plating of titanium with chromium. 3,729,392, Cl. 204-51.000.

Briggs, Edward Miles; Edgar, William; and Rimmer, Rodgers Eugene, to Southwest Research Institute. Underwater wet electrical connector. 3,729,699, Cl. 339-42.000.

Brissenden, Sidney James George, to Imperial Chemical Industries Limited. Container filling device. 3,729,030, Cl. 141-1.000.

British Insulated Callender's Cables Limited: *See*—
Hill, Alan Harvey, 3,729,539.

British Petroleum Company Limited, The: *See*—
Allum, Keith George, 3,729,428.

Brokl, Stanley S.: *See*—
United States of America, National Aeronautics and Space Administration, with respect to an invention of, 3,729,129.

Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, to Hoffmann-La Roche Inc. Process for the preparation of alkyl substituted resorcinols. 3,729,519, Cl. 260-613.00r.

Brovoll, Oskar, to Thune-Eureka A/S. Machine for the application of glue to a running band and the cutting of the band at the place of the glue application. 3,728,986, Cl. 118-41.000.

Brown & Root, Inc.: *See*—
Lochridge, Joe C., 3,728,865.

Brown & Williamson Tobacco Corporation: *See*—
Merker, Steve L., 3,729,636.

Brown, Arthur K., Jr., to Bendix Corporation, The. Hydraulic brake booster pressure limiting device. 3,728,942, Cl. 91-469.000.

Brown, Boveri & Cie A.G.: *See*—
Schmale, Johannes, 3,729,612.

Brown, John J., Jr.: *See*—
Stuart, Gerald L.; and Brown, John J., Jr., 3,729,084.

Brown, William D.; Robertshaw, Thomas L.; and Williams, Garner W., to Janney Cylinder Company. High-strength, centrifugally cast copper-base alloy bearing cage. 3,729,347, Cl. 148-32.000.

Browning, Myron E.; and Solidum, Hamilton M., to American Chemical & Refining Company, Incorporated. Rhodium plating composition and method for plating rhodium. 3,729,396, Cl. 204-47.000.

Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bljum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna. Purification of titanium tetrachloride fro concomitant impurities. 3,729,540, Cl. 423-76.000.

Bruning, Jurgen; Eckert, Hans-Werner; and Heinz, Arnold, to Henkel & Cie G.m.b.H. Liquid softening rinsing agent compositions. 3,729,416, Cl. 252-8.800.

Bruns, Wesley W. Adjustable retractable auger hopper. 3,729,087, Cl. 198-122.000.

Brunswick Corporation: *See*—
Conklin, Robert M.; Anderson, Robert I.; Gautraud, Michael G.; and Shimanski, William H., 3,729,315.

Bruson, Herman A.; and Gould, Henry, to Milchem Incorporated. Detergent builder composition. 3,729,432, Cl. 252-545.000.

BTU Engineering Corporation: *See*—
Beck, Jacob Howard, 3,729,570.

Buc, Karl Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. Combating arthropods with N-acyl-1,2-dicarbonyl-phenylhydrazones. 3,729,562, Cl. 424-304.000.

Buchner, Robert Bertold, to U.S. Philips Corporation. Telecommunication system. 3,729,592, Cl. 179-18.0fc.

Budd Company, The: *See*—
Buyze, Edwin K., 3,729,067.

Buedel, Charles Kenneth, to GTE Automatic Electric Laboratories Incorporated. Digital processing system. 3,729,715, Cl. 340-172.500.

Buell, Donald F., to General Electric Company. Clamp circuit for a color television receiver. 3,729,577, Cl. 178-5.40r.

Buhrer, Erwin, mesne: *See*—
Wernli, Max; and Tanner, Hans, 3,729,118.

Burdett Oxygen Co. of Cleveland, Inc.: *See*—
Barrett, Charles D., Jr., 3,728,825.

Burger, Guy Claude. Baby's napkin. 3,729,004, Cl. 128-286.000.

Burnett, Henry J., to Pollutant Separation, Inc. Apparatus for separating pollutants and obtaining separate liquids and solids. 3,729,042, Cl. 159-2.000.

Burridge, George D. Tamper bar for a tamping machine. 3,729,055, Cl. 172-719.000.

Burroughs Corporation: *See*—
Snead, Edwin E.; and Pitkow, Jay B., 3,729,262.

Burton, John, Machine Corporation: *See*—
Rice, Harold B., 3,729,108.

Bushman, John Andrew, to Pye Limited. Medical respirators. 3,729,001, Cl. 128-188.000.

Butler, John D.: *See*—
Fitzner, Marcel; and Butler, John D., 3,729,096.

Butler, William M., to Canadian Patents and Development Limited. Collapsible desk. 3,729,244, Cl. 312-195.000.

Butterfield, Ted Lee, to Spraying Systems Co. Unloader valve for spray guns. 3,729,018, Cl. 137-469.000.

Buyken, Frank E.; and Foster, Robert C. Form panel with snapable form-tie. 3,729,166, Cl. 249-190.000.

Buyze, Edwin K., to Budd Company, The. Mounting means and disk for an externally supported disk brake. 3,729,067, Cl. 188-18.00a.

Cable Electric Products, Inc.: *See*—
Schwartz, Frederic W., 3,729,628.

Cachon, Rene P.; Perlmann, Ariel L.; and Schorr, Michael A., to International Business Machines Corporation. Vacuum holding apparatus. 3,729,206, Cl. 279-3.000.

Cain, Lester Lee: *See*—
Sheldon, Loren B.; Cain, Lester Lee; and Dower, Ethell J., 3,728,896.

Calderazzo, Fausto: *See*—
L'Eplattenier, Francois; and Calderazzo, Fausto, 3,729,512.

Caldwell, Lyle. Hydrothermal treatment of subsurface earth formations. 3,729,052, Cl. 166-283.000.

Callan, John E.; and Freitag, Lawrence F., to Allen-Bradley Company. Coded circuit card mounting device with cover. 3,729,657, Cl. 317-101.0dh.

Calvert, Philip B., to Roberts Dairy Company. Freeze and thaw imitation sour cream. 3,729,322, Cl. 99-54.000.

Cameron Iron Works, Inc.: *See*—
Oliver, John P., 3,729,015.

Camosso, Dominico, to RIV-SKF Officine di Villar Perosa S.p.A. Roiler bearing and cages therefor. 3,729,239, Cl. 308-217.000.

Camp, Frederick W.; Eisen, Frederic S.; Fear, James Van Dyck; and Kirk, Merritt C., Jr., to Sun Oil Company of Pennsylvania, mesne. Hydrogenation process utilizing recovered catalyst. 3,729,407, Cl. 208-10.000.

Canadian Patents and Development Limited: *See*—
Butler, William M., 3,729,244.

Cane, Albert: *See*—
Shapero, Wallace H.; and Cane, Albert, 3,728,988.

Canfield, James H.: *See*—
Rohrback, Gilson H.; and Canfield, James H., 3,729,501.

Cannon, Robert B. Bottom discharge bin and dust tight unloading station therefor. 3,729,121, Cl. 222-185.000.

Canon Kabushiki Kaisha: *See—*
Kiyohara, Takehiko, 3,728,952.
Canon Kubushiki Kaisha: *See—*
Torigai, Akiyoshi, 3,729,077.
Cardinal of Adrian, Inc.: *See—*
MacDonald, Robert D., 3,729,045.
Carlisle Chemical Works, Inc.: *See—*
Hechenbleikner, Ingenuin A., 3,729,442.
Carnot, John J.; Tingquist, Stanley Carroll; Robb, Ronald Robert; and Feagin, Roy Chester, to Howmet Corporation. Refractory support for shell molds. 3,729,050, Cl. 164-361.000.
Caron, Michel; Coquet, Claude; Coste, Philippe; and Rey, Marcel, to Societe des Usines Chimiques de Pierrelatte. Process for the production of fluorine. 3,729,395, Cl. 204-59.00r.
Carpenter, George J., to American Optical Corporation. Method of making cemented fiber optical devices. 3,729,356, Cl. 156-296.000.
Carpenter Technology Corporation: *See—*
Lukes, Stephen M.; and Caton, Robert L., 3,729,344.
Carr, Earl L.; and Foster, James E., to United States Steel Corporation. Apparatus for sorting by length up-set headed pieces such as nails and the like. 3,729,095, Cl. 209-90.000.
Carter, Andrew G., to Carter Engineering Company. Dual actuation safety belt buckle mechanism. 3,728,764, Cl. 24-230.0ap.
Carter, Andrew G.; and Morgan, Charles L. Shadow-line device with a structurally independent guideway. 3,729,265, Cl. 356-256.000.
Carter Engineering Company: *See—*
Carter, Andrew G., 3,728,764.
Carter, James L.; and Sinfelt, John H., to Esso Research and Engineering Company. Catalytic reforming process. 3,729,408, Cl. 208-65.000.
Casad, Burton M.: *See—*
Snyder, Charles F.; and Casad, Burton M., 3,728,844.
Casalta, Jean Pierre; Dubs, Claude; and Lechevallier, Andre, to Electricite de France. Electric line tensioning apparatus. 3,729,172, Cl. 254-67.000.
Cash, William D.; Petrack, Barbara; and Weiner, Murray, to Ciba-Geigy Corporation. Method of treating movement disorders. 3,729,563, Cl. 424-248.000.
Castin, Marcel; and Demilie, Paul, to Societa Chimica Larderello S.p.A. Process for producing a borax solution. 3,729,545, Cl. 423-280.000.
Castrucci, Paul P.; Haddad, Nadim F.; and Pecoraro, Raymond P., to International Business Machines Corporation. Optimized glass photographic mask. 3,729,316, Cl. 96-36.200.
Caterpillar Tractor Co.: *See—*
Anderson, Rodney H.; and Day, Ralph R., 3,729,074.
Brantley, Jerry K., 3,728,916.
Cobb, Delwin E.; and Sullivan, Robert J., 3,729,137.
Cryder, John R., 3,728,941.
Groff, Eugene R.; and Welsh, James P., 3,729,604.
Caterpillar Tractor Company: *See—*
Yates, Lyle F.; Morris, Hugh C.; and Schmitt, James L., 3,729,171.
Caton, Robert L.: *See—*
Lukes, Stephen M.; and Caton, Robert L., 3,729,344.
Cavalla, John Frederick; and White, Alan Chapman, to Wyeth, John, & Brother Limited. Hexahydroazepines. 3,729,465, Cl. 260-239.00b.
Cebr. Bohler & Co.: *See—*
Plessing, Rudolf, 3,729,307.
Celanese Corporation: *See—*
Gump, Klaus H.; and Stuetz, Dagobert E., 3,729,549.
Powell, Stancil Driftwood, 3,729,340.
Zellner, Carl N.; and Steinman, Henry W., 3,729,453.
Cellucap Manufacturing Co.: *See—*
Wagenfeld, Gilbert B., 3,728,740.
Celotex Corporation, The: *See—*
Hildebrandt, Guillermo J.; Maugel, Theodore R.; Morgan, Albert R.; and Stern, Boris A., 3,729,373.
Centrul de Sudura si Incercari la Oboseala Timisoara: *See—*
Vas, Alexandru, 3,729,611.
Cerny, Frank J., Jr.; and Linder, Donald L., to Motorola, Inc. Oscillator with switchable filter control voltage input for rapidly switching to discrete frequency outputs. 3,729,688, Cl. 331-1.00a.
Chang, Kyung Taik, to Korea Institute of Science and Technology. Explosive cladding on geometrically non-uniform metal material. 3,728,780, Cl. 29-470.100.
Chang, Yi Han; Evanega, George R.; and McLamore, William M., to Pfizer Inc. N-Secondary alkyl alkanediamines and derivatives thereof as anti-inflammatory agents. 3,729,564, Cl. 424-325.000.
Chapman, Peter Frederick, to Elliott Brothers (London) Ltd. Terminal interconnections. 3,729,698, Cl. 339-18.00r.
Chappelle, James H., to International Paper Company. Meter for measuring brightness of bleached fibers and controlling the bleaching process. 3,729,375, Cl. 162-252.000.
Charipar, Joseph: *See—*
Everett, Thorald E. Montague; and Charipar, Joseph, 3,728,954.
Charle, Roger; Aviak, Charles; and Kalopissis, Gregoire, to Societe Anonyme dite: L'Oreal. Cosmetic composition containing microencapsulated solvents for nail enamel. 3,729,569, Cl. 424-14.000.
Chartet, Andre, to Societe Anonyme des Usines Chausson. Process for brazing stainless steel parts to parts of aluminum and aluminum alloys. 3,728,783, Cl. 29-495.000.
Check, John M.; and Rupert, Gary F., to Raycon Corporation. Multi-electrode electrical discharge machining apparatus. 3,729,609, Cl. 219-69.00g.
Chemische Fabrik Pfersee GmbH: *See—*
Bernheim, Willy; and Deiner, Hans, 3,729,437.
Chen, Nai Yuen, to Mobil Oil Corporation. Hydrocarbon conversion. 3,729,409, Cl. 208-135.000.
Chenkin, Leila R.: *See—*
Redmond, Benjamin, 3,729,059.
Chernyakov, Iosif Efimovich: *See—*
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Khotimsky, Valery Samuilovich; Kopkov, Vadim Ivanovich; and Chernyakov, Iosif Efimovich, 3,729,454.
Chevron Research Company: *See—*
Curry, Leonard L., 3,729,530.
Chisholm, James Edwards: *See—*
Schippers, James Henry; and Chisholm, James Edwards, 3,729,241.
Cho, Boong Y.; Pfeifer, Robert J.; and Utt, Orval L., to Industrial Nucleonics Corporation. Penetrating radiation gauge. 3,729,632, Cl. 250-83.30d.
Chorvat, Robert J.; Pappo, Raphael; and Scaros, Mike G., to Searle, G. D., & Co. 2-Oxacholesterol and intermediates. 3,729,489, Cl. 260-343.20s.
Chow, Quon Sang, to Northern Electric Company, Limited. Digital guard-time circuit for use in a frame synchronization circuit. 3,729,586, Cl. 178-69.50r.
Christensen, Earl, to Streater Industries Inc. Adjustable shelf bracket. 3,729,161, Cl. 248-242.000.
Christensen, Robert G. Turntable. 3,728,970, Cl. 104-44.000.
Chromalloy American Corporation: *See—*
Weinstein, Martin; Spfirs, Kenneth K.; and Baer, Robert B., 3,729,295.
Chugai Seiyaku Kabushiki Kaisha: *See—*
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.
Chvatal, Leland A.: *See—*
Hopkins, Walker L.; Chvatal, Leland A.; and Edwards, Richard R., 3,729,624.
Ciba-Geigy AG: *See—*
Hegar, Gert, 3,729,459.
Ciba-Geigy Corporation: *See—*
Anner, Georg; and Wieland, Peter, 3,729,466.
Cash, William D.; Petrack, Barbara; and Weiner, Murray, 3,729,563.
Denss, Rolf; Clauson-Kaas; and Ostermayer, Franz, 3,729,559.
Dietrich, Henri; and Lehmann, Claude, 3,729,462.
Dietrich, Henri; and Lehmann, Claude, 3,729,463.
Peterli, Hans Jakob; and Heller, Hansjorg, 3,729,443.
Rosen, Melvin Harris; and Blatter, Herbert Morton, 3,729,487.
Ciccarelli, Roger N., to Xerox Corporation. Surface deformable imaging process and member. 3,729,310, Cl. 96-1.100.
Cincinnati Milacron Inc.: *See—*
Kaesemeyer, Carl W., 3,728,917.
Cities Service Company: *See—*
Olechowski, Jerome Robert, 3,729,464.
Claflin, Hyle K.; and Belke, Jack T., to Westarn Corporation. Double flanged support leg. 3,729,212, Cl. 280-150.500.
Clark, William B., to General Motors Corporation. Transmission shift control. 3,728,915, Cl. 74-868.000.
Clauson-Kaas: *See—*
Denss, Rolf; Clauson-Kaas; and Ostermayer, Franz, 3,729,559.
Clayton, Harry B. Book-index notcher. 3,728,926, Cl. 83-467.000.
Clelford, Anthony Peter: *See—*
Bennett, Roger; and Clelford, Anthony Peter, 3,729,659.
Clijsen, Cornelis Wilhelmus Adrianus, to U.S. Phillips Corporation. Coupling for shafts. 3,728,871, Cl. 64-27.00r.
Clouser, Leon C., Jr., to Seeburg Corporation, The. Cabinet assembly for coin operated phonograph. 3,729,240, Cl. 312-8.000.
Coakley, James L., to Abex Corporation. Reversible fluid power transfer apparatus. 3,728,860, Cl. 60-405.000.
Cobb, Delwin E.; and Sullivan, Robert J., to Caterpillar Tractor Co. Mechanically actuated water cannon. 3,729,137, Cl. 239-101.000.
Cobbledick, David S., to General Tire & Rubber Company, The. Preparation of vinyl-coated polyurethane foams. 3,729,370, Cl. 161-160.000.
Code Designs Limited: *See—*
Lovatt, Alan Felix, 3,728,818.
Coffman, Robert B. Tape breaker (case I). 3,728,772, Cl. 29-239.000.
Cogar Corporation: *See—*
Kelly, William J., 3,729,666.
Sevilla, Ernesto G.; and Titus, Robert J., 3,729,730.
Collins, Donald Louis William; and Gillett, Brian Arthur, to Alcan Research and Development Limited. Filtration of molten metal. 3,729,097, Cl. 210-69.000.
Collins Radio Company: *See—*
Hemme, William R., 3,729,683.
Commercial Solvents Corporation: *See—*
Runge, Wallace F., 3,729,533.
Compagnie des Compteurs: *See—*
Janssen, Slyvain, 3,728,893.
Compagnie des Fours Industries: *See—*

Bourrel, Jean; Remond, Maurice; Potie, Noel; and Lagacherie, Guy, 3,729,180.
Compagnie Generale d'Electricite, mesne: *See*—
Godard, Bruno; and Lacour, Bernard, 3,729,689.
Compagnie Industrielle de Mecanismes: *See*—
Boyriven, Paul, 3,728,904.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Augris, Rene; and Beyer, Jacques, 3,729,709.
Beduchaud, Michel, 3,729,248.
Compagnie Internationale des Pieux Armes Frankignoul, Societe Anonyme: *See*—
Baar, Michel Armand Rene Alfred, 3,729,164.
Compo Industries, Inc.: *See*—
Dunlap, Robert B.; and Peterson, Ewald O., 3,728,985.
Condon, Joseph Henry, to Bell Telephone Laboratories, Incorporated. Commutating capacitor impedance device. 3,729,695, Cl. 333-70.00a.
Conger, Robert L., to United States of America, Navy. Missile guidance system. 3,729,150, Cl. 244-3.130.
Conklin, Robert M.; Anderson, Robert I.; Gautraud, Michael G.; and Shimanski, William H., to Brunswick Corporation. Method of making scenes for a golf game. 3,729,315, Cl. 96-27.00r.
Consolidated Airborne Systems, Inc.: *See*—
Wallman, Irwin, 3,728,897.
Consolidated Coal Company: *See*—
Gorin, Everett, 3,729,551.
Consortium fur Elektrochemische Industrie G.m.b.H.: *See*—
Dietz, Wolfgang; and Seiter, Hartmut, 3,729,341.
Container Corporation of America: *See*—
Vuilleumier, Ralph O., 3,728,945.
Continental Oil Company: *See*—
Snyder, Charles F.; and Casad, Burton M., 3,728,844.
Conversion Chemical Corporation: *See*—
Hsu, Grace F.; and Beckwith, Merton M., 3,729,394.
Cook, John S.; and Bosley, Denis V., to Mattel, Inc. Toy vehicle track system. 3,729,134, Cl. 238-10.00e.
Cook, Ralph H. Potential-current transformer device. 3,729,650, Cl. 317-14.00r.
Coop, Vernon W., to Sugden, Bazil H. Method and apparatus for joining sheet metal, and sheet metal joints. 3,728,881, Cl. 72-52.000.
Cooper, Brian Sydney; Cronk, John Edward; and Hobbs, Derek John, to Johnson, Matthey & Co., Limited. Method and apparatus for making spectrometric measurements of a constituent of a test sample. 3,729,259, Cl. 356-82.000.
Cooper, Edward: *See*—
Wolfer, Allan J.; and Cooper, Edward, 3,729,708.
Cooper, William: *See*—
Whiteside, Roger B.; and Cooper, William, 3,729,040.
Coquet, Claude: *See*—
Caron, Michel; Coquet, Claude; Coste, Philippe; and Rey, Marcel, 3,729,395.
Cornelius, Gail, to Wade, R. M., & Co. Water motor with partial circle pattern. 3,729,141, Cl. 239-212.000.
Cosden Oil & Chemical Company: *See*—
Bracke, William J. I., 3,729,517.
Cosgrove, Richard Elmond, II; and Mask, Charles Arnold, to Beckman Instruments, Inc. Calcium ion measuring electrode. 3,729,401, Cl. 204-195.001.
Coste, Philippe: *See*—
Caron, Michel; Coquet, Claude; Coste, Philippe; and Rey, Marcel, 3,729,395.
Court, Patrick R. J., to Optical Systems Corporation. Encoding and decoding system for CATV. 3,729,576, Cl. 178-5.100.
Covert, Garry C., to Heath Company. Model roadway track. 3,729,133, Cl. 238-10.00e.
Crabtree, Allan: *See*—
Austin, Peter William; and Crabtree, Allan, 3,729,476.
Cragoe, Edward J., Jr., to Merck & Co., Inc. 1-Cyano-2-substituted ethenesulfonamides. 3,729,500, Cl. 260-465.00d.
Crane Co.: *See*—
Hirzel, Edgar A., 3,729,234.
Crane, Robert M., to United States Steel Corporation. Joint for connecting sections of a member subject to cyclic compressive loading. 3,729,219, Cl. 287-125.000.
Crawford Fitting Company: *See*—
Spontelli, Leonard P., 3,728,771.
Crhonek, Oldrich: *See*—
Zabrodsky, Zdenek; Crhonek, Oldrich; Sebela, Jiri; and Mares, Milos, 3,729,029.
Cronk, John Edward: *See*—
Cooper, Brian Sydney; Cronk, John Edward; and Hobbs, Derek John, 3,729,259.
Cross, Malcolm Geoffrey; and Musson, Joseph Thomas Barrow, to Marconi Company Limited, The. Spectrum analysers. 3,729,738, Cl. 343-5.0sa.
Crouzet: *See*—
Lucas, Pierre; and Paillet, Pierre, 3,728,786.
Crowe, Gordon Appling, to North American Urethanes, Inc. Casting process. 3,728,777, Cl. 29-421.000.
Crucible Inc., mesne: *See*—
Steven, Gary, 3,729,293.
Cryder, John R., to Caterpillar Tractor Co. Flow control valve. 3,728,941, Cl. 91-447.000.
Csejka, David A.: *See*—
Sawyer, Arthur W.; and Csejka, David A., 3,729,497.
Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, to NIKEX Nehezipari Kulkereskedelmi Vallalat. Process for the removal of cyanide from sewage by means of formaldehyde. 3,729,413, Cl. 2-9-73.
Cull, Neville Leverne; Gladrow, Elroy Merle; Mason, Ralph Burgess; and Hamner, Glen Porter, to Esso Research and Engineering Company. Dimerization. 3,729,515, Cl. 260-602.000.
Cummins, Wayne. Rear-view automotive mirror. 3,729,163, Cl. 248-487.000.
Cunningham, Robert J., Jr. Suspension system for vehicles. 3,729,210, Cl. 280-96.20r.
Cunningham, Victor Ralph; Dagenham, Dock; and Boutle, David Leonard, to Porous Plastics Limited. Method for preparing vapour permeable flexible sheet materials. 3,729,538, Cl. 264-49.000.
Cuomo, Frank W.: *See*—
Mueller, William J.; and Cuomo, Frank W., 3,729,703.
Currie, James R.; and Kissell, Ralph R., to United States of America, National Aeronautics and Space Administration. Ratemeter. 3,729,676, Cl. 324-78.00e.
Curry, Leonard L., to Chevron Research Company. Thermoplastic compositions comprising poly-1-olefin and a polymer of chlorinated oretane. 3,729,530, Cl. 260-897.00c.
Curtis, Lawrence A.: *See*—
Bonsky, Elmer C.; and Curtis, Lawrence A., 3,729,589.
Curtis, Ronald E.; English, Gary L.; and Hense, James R., to Production Technology Inc., mesne. Method of producing a stranded wire assembly by friction welding. 3,728,781, Cl. 29-470.300.
Curts, Julius: *See*—
Lehmann, Horst; and Curts, Julius, 3,729,338.
Cypert, James D.: *See*—
Trimble, Carroll O., 3,729,165.
Czubak, Albin S.: *See*—
Ellis, Myron P.; Czubak, Albin S.; and McDonald, Keith A., 3,728,829.
Dabringhausen, Erich: *See*—
Goldbach, Horst; Brandenburg, Rudolf; and Dabringhausen, Erich, 3,728,819.
Dageford, Ernest C., to BEC Products, Inc., mesne. Remote ultrasonic sending device for air conditioner. 3,729,735, Cl. 340-419.000.
Dagenham, Dock: *See*—
Cunningham, Victor Ralph; Dagenham, Dock; and Boutle, David Leonard, 3,729,538.
Daimler-Benz Aktiengesellschaft: *See*—
Andres, Rudolf, 3,729,220.
Scherenberg, Hans O., 3,728,856.
Danfoss A/S: *See*—
Andersen, Jens Nicolai, 3,729,605.
Hounsgard, Henning, 3,729,697.
Danneberg, Peter: *See*—
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; and Schromm, Kurt, 3,729,474.
Darby, William J.: *See*—
Shaffer, Donald H., 3,729,198.
Dare, Franklin M.; and Dare, Melissa C. Disposable high chair tray cover. 3,729,037, Cl. 150-521.00r.
Dare, Melissa C.: *See*—
Dare, Franklin M.; and Dare, Melissa C., 3,729,037.
Darling, Richard H.; and Siegl, Ludwig R., to International Business Machines Corporation. Turntable for rigidly mounting thin flexible magnetic discs. 3,729,720, Cl. 340-174.10e.
Darnell, Rex C. Bicycle transmission. 3,728,912, Cl. 74-769.000.
Davankov, Vadim Alexandrovich; Rogozhin, Sergei Vasilievich; and Tsjurupa, Maria Petrovna. Macronet polystyrene structures for ionites and method of producing same. 3,729,457, Cl. 260-88.20c.
Davidson, Jackson B., to United States of America, Atomic Energy Commission. Device and method for improving the vertical resolution of a two-dimensional television-based radiation detection system. 3,729,585, Cl. 178-7.200.
Davis, Donald A.: *See*—
Rosenthal, Louis A.; and Davis, Donald A., 3,729,672.
Davis, Lester M. Fishing line display-dispenser. 3,729,091, Cl. 206-44.110.
Davis, Robert E.: *See*—
Ensmann, Burt W.; and Davis, Robert E., 3,728,816.
Davis, William J.; and Gilles, Richard C., to Ferri, Joseph E. Lubricating composition. 3,729,415, Cl. 252-25.000.
Day, Elaine Hilda: *See*—
Williamson, William Robert Nigel; Hicks, Terence Alan; and Day, Elaine Hilda, 3,729,475.
Day, Lucius B., Jr., to United States of America, Navy. Suppressed carrier single-sideband signal detection. 3,729,679, Cl. 325-49.000.
Day, Ralph R.: *See*—
Anderson, Rodney H.; and Day, Ralph R., 3,729,074.
De Angelo, Michael Anthony; and Sharp, Donald Jex, to Western Electric Company, Incorporated. Method of preparing at least one conductive form. 3,729,388, Cl. 204-3.000.
De Angelo, Michael Anthony; and Sharp, Donald Jex, to Western Electric Company, Incorporated. Method of electroplating discrete conductive regions. 3,729,389, Cl. 204-15.000.
De Boer, Jacob, to North American Philips Co., Inc. Converting circuit for a line-sequential television signal recording device. 3,729,579, Cl. 178-5.4cd.
de Jager, Frank: *See*—

Glasbergen, Johannes Wilhelmus; Greefkes, Johannes Anton; de Jager, Frank; and van den Enden, Adrianus Wilhelmus Maria, 3,729,678.
de Koe, Oscar Bernardus Philomenus Rikker; and Eggermont, Ludwig Desire Johan, to U.S. Philips Corporation. Information buffer for converting a received sequence of information characters. 3,729,717, Cl. 340-172.500.
De Lavalette, Pierre de Lacroix, to Societe Anonyme dite: SKF Compagnie d'Applications Mecaniques. Overrunning clutch. 3,729,076, Cl. 192-41.00a.
De Rooij, Abraham H.: *See—*
Elmendorp, Jan; and De Rooij, Abraham H., 3,729,304.
De Schrijver, Frans Carolus; and Leenders, Luc, to Agfa-Gevaert N.V. Photocycloaddition polymerisation of bis-coumarins. 3,729,405, Cl. 204-159.230.
De Vos, Ferdinand A.; and Ter Steege, Jan H., to Werkspoor-Amsterdam, N.V. Apparatus for the preparation of screen printing forms with an adjustable relation between grey values of the pattern and grey values of the printing forms. 3,729,584, Cl. 178-6.60b
Dean, Abner. Building corner assembly. 3,728,834, Cl. 52-282.000.
Deering Milliken Research Corporation: *See—*
Greene, Charles W., 3,729,365.
Defazio, Louis D. Epoxy coating of refurbished balls. 3,728,776, Cl. 29-401.000.
Degiorgis, Francesco: *See—*
Lampredi, Aurelio; Leoni, Aldo; Ghilardi, Francesco; Degiorgis, Francesco; and Joli, Luigi, 3,728,990.
Deiner, Hans: *See—*
Bernheim, Willy; and Deiner, Hans, 3,729,437.
Deith, Geoffrey Wilson: *See—*
Ingham, Robert Edward; and Deith, Geoffrey Wilson, 3,729,368.
Delano, Roger Albert: *See—*
Schofield, John Allan; and Delano, Roger Albert, 3,729,424.
Deloire, Raymond; and Durand, Jacques, to La Spirotechnique and Chromex. Heating garment. 3,729,613, Cl. 219-211.000.
Deltrol Corporation: *See—*
Harris, John L., 3,729,615.
Demilie, Paul: *See—*
Castin, Marcel; and Demilie, Paul, 3,729,545.
Denney, Joseph M.; and Selden, Ronald B., to Digital Development Corporation. Redundant recordation to reduce access time. 3,729,725, Cl. 340-174.10g.
Denss, Rolf; Clauson-Kaas; and Ostermayer, Franz, to Ciba-Geigy Corporation. 1,2-Oxazine derivatives in alleviating pain and treating inflammatory diseases. 3,729,559, Cl. 424-248.000.
DePlante, Henri, to Avions Marcel Dassault Vaucresson. Method and device related to the ejection of a person from an aircraft cockpit or the like. 3,729,154, Cl. 244-122.0af.
Desert West, Inc.: *See—*
Schafer, Jack R.; and Linton, Denton C., 3,729,182.
DeSoto, Inc.: *See—*
Wolf, Richard E.; and Gorman, Susan B., 3,729,483.
Deutsch Company Electronic Components Division, The: *See—*
Fischer, Milton G., 3,728,789.
Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Lussling, Theodor; Theissen, Ferdinand; and Weigert, Wolfgang, 3,729,499.
Dewey, Clyde G., to General Electric Company. Redundant triggering means for HVDC valve. 3,729,670, Cl. 321-11.000.
Deye, Neil S.; and Kuhn, Richard B., to North American Rockwell Corporation. Tracking system tracker unit. 3,729,582, Cl. 178-6.800.
Dietrich, Henri; and Lehmann, Claude, to Ciba-Geigy Corporation. p-Aminoalkylbenzenesulfonamide derivatives. 3,729,462, Cl. 260-309.700.
Dietrich, Henri; and Lehmann, Claude, to Ciba-Geigy Corporation. p-Aminoalkyl benzenesulfonamide derivatives. 3,729,463, Cl. 260-309.700.
Dietz, Wolfgang; and Seiter, Hartmut, to Consortium fur Elektrochemische Industrie G.m.b.H. Method for producing epitaxial III-V semiconductor layers containing gallium. 3,729,341, Cl. 117-201.000.
Digital Development Corporation: *See—*
Denney, Joseph M.; and Selden, Ronald B., 3,729,725.
Dillies, Pierre. Process and apparatus for the treatment of loose materials such as textile fibres. 3,729,290, Cl. 8-149.200.
D'Imperio, Eugene A. Tree seat. 3,729,160, Cl. 248-218.000.
Display Systems Corporation: *See—*
Anderson, Deyrol E., 3,729,581.
Dobbert, Arnold E., to Rheem Manufacturing Company. Clipping apparatus. 3,728,773, Cl. 29-243.570.
Docker, Leslie Thomas, to Slumberland Group Limited. Beds. 3,728,747, Cl. 5-351.000.
Dolby, Ray Milton. Compressor/expander switching methods and apparatus. 3,729,693, Cl. 333-14.000.
Doleman, Jack; and Hills, William H., to Monsanto Company. Continuously molded thermoplastic materials. 3,729,364, Cl. 161-36.000.
Dollenmayer, William L., to International Business Machines Corporation. Miniature disc dictation machine featuring absolute synchronized disc-transducer driving arrangement. 3,729,201, Cl. 274-4.00h.
Domnitch, Irving. Portable incinerator. 3,728,976, Cl. 110-8.00r.
Domrachev, Georgy Alexeevich; Melnikov, Valery Vasilievich; Kazarinov, Georgy Borisovich; Skorik, Gleb Alexandrovich; and Fukin, Konstantin Konstantinovich. Method of depositing inorganic coatings from vapour phase. 3,729,335, Cl. 117-95.000.
Donahue, Gary M., to Reynolds Metal Company. Decorative carton with removable band and blank therefor. 3,729,126, Cl. 229-38.000.
Doran, John A., III: *See—*
MacKay, John A.; and Doran, John A., III, 3,729,300.
Doran, Wilbur J., to Lilly, Eli, and Company. Herbicidal method employing trifluoromethyl phenyl acetic acid and amides thereof. 3,729,305, Cl. 71-115.000.
Dorey, Howard Anthony, to Solatron Electronic Group Limited. Analogue to digital converters. 3,729,733, Cl. 340-347.0nt.
Dorman, Isidore: *See—*
Engelstein, Stanley; and Dorman, Isidore, 3,729,094.
Dow Chemical Company, The: *See—*
Frasure, James W., 3,729,135.
Jehu, Richard Walker, 3,728,975.
Vivian, Thomas A., 3,729,331.
Dow Corning Corporation: *See—*
Bey, Alvin E.; and Heffel, James R., 3,729,444.
Smith, Arthur G.; and Ki Kim, Yung, 3,729,445.
Dowd, Albert A., to International Business Machines Corporation. Ribbon feed cartridge. 3,728,963, Cl. 101-336.000.
Dower, Ethell J.: *See—*
Sheldon, Loren B.; Cain, Lester Lee; and Dower, Ethell J., 3,728,896.
Draber, Wilfried: *See—*
Buc, Karl Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,729,562.
Dresser Industries, Inc.: *See—*
Morris, Martin; and Henry, George Ronald, 3,729,329.
Drew, Robert S.; and Jones, John E., to International Business Machines Corporation. Scanning mechanism and printer. 3,729,618, Cl. 235-61.11e.
Drill-Au-Mation, Inc.: *See—*
Sheldon, Loren B.; Cain, Lester Lee; and Dower, Ethell J., 3,728,896.
Du Pont de Nemours, E. I., and Company: *See—*
Berezin, Gilbert H., 3,729,513.
Irwin, Carl F.; and Muncaster, William T., 3,729,386.
Lemke, Charles H., 3,729,548.
Mathre, Owen Bertwell; and Swalheim, Donald Arthur, 3,729,390.
Parker, Fred W., 3,729,439.
Du Pont de Nemours, E. I., and Company, mesne: *See—*
Bride, John Edwin, 3,729,392.
Dubs, Claude: *See—*
Casalta, Jean Pierre; Dubs, Claude; and Lechevallier, Andre, 3,729,172.
Duembgen, Gerd: *See—*
Merger, Franz; Fuchs, Werner; Duembgen, Gerd; and Oberhansberg, Joachim, 3,729,506.
Dufton, J. Peter; and Hallman, Beverley G., to GTE Automatic Electric Laboratories Incorporated. Computer having associative search apparatus. 3,729,718, Cl. 340-172.500.
Dufton, John Peter: *See—*
Foster, James H.; and Dufton, John Peter, 3,729,711.
Dunlap, Richard M., to United States of America, Navy. Acoustic homing torpedo. 3,728,982, Cl. 114-23.000.
Dunlap, Robert B.; and Peterson, Ewald O., to Compo Industries, Inc. Adhesive applicator for lasting machine. 3,728,985, Cl. 118-2.000.
Dunlap, William B.: *See—*
Arnett, Gene L.; and Dunlap, William B., 3,729,522.
Dunn, Thomas A., to Motorola, Inc. Plastic encapsulation of semiconductor devices. 3,729,573, Cl. 174-15.00r.
Dunn, Wendell E., Inc.: *See—*
Dunn, Wendell E., Jr., 3,729,543.
Dunn, Wendell E., Jr., to Dunn, Wendell E., Inc. Process for preparing alkali-metal tetra-chloroferrate. 3,729,543, Cl. 423-138.000.
Duprat, Yves Jean Guy. Propulsive double-base charges, strand-like and having variable thickness. 3,729,349, Cl. 149-2.000.
Durand, Jacques: *See—*
Deloire, Raymond; and Durand, Jacques, 3,729,613.
Durgarian, Sergei Garievich: *See—*
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Khotimsky, Valery Samuilovich; Kopkov, Vadim Ivanovich; and Chernyakov, Iosif Efimovich, 3,729,454.
Duria-Werk Karl Kempf KG: *See—*
Heck, Friedrich, 3,729,292.
Dusza, Zsigmond: *See—*
Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, 3,729,413.
Dynasciences Corporation: *See—*
Fraser, David B., 3,728,948.
Dynetics Corporation: *See—*
Perry, Kenneth E., 3,728,821.
Eastman Kodak Company: *See—*
Edwards, Evan A., 3,728,949.
Glassman, David M., 3,729,712.
Kerr, William C., 3,729,648.
LaChappele, Paul A.; and Mosehauer, Michael, 3,729,649.
Morse, John Edwin, 3,728,953.
Nelson, Clarence N., 3,729,252.

Stimson, Ronald M., 3,729,317.
Wilcox, David H., Jr., 3,729,493.
Eastman Kodak Company, mesne: *See—*
Wolfer, Allan J.; and Cooper, Edward, 3,729,708.
Eby, Jack A.; and Andersen, Eugene F., to Topper Floats, Inc. Tire float and method for forming same. 3,728,749, Cl. 9-8.00r.
ECC Corporation: *See—*
Fricker, David C.; and Whittaker, Thomas F., 3,729,651.
Eckert, Hans-Werner: *See—*
Bruning, Jurgen; Eckert, Hans-Werner; and Heinz, Arnold, 3,729,416.
Eckert, Konrad; Knapp, Heinrich; Sautter, Wilfried; and Stein, Volkhard, to Bosch, Robert, G.m.b.H. Fuel injection apparatus including an air sensor and means for the direction-dependent damping of its movement. 3,728,993, Cl. 123-119.00r.
Eddowes, Alfred M.: *See—*
Beans, Allen F.; Eddowes, Alfred M.; Gagliardi, Richard P.; and Koos, Edward E., 3,729,739.
Edelman, Alfred E. Method and apparatus for tooth restoration. 3,728,794, Cl. 32-15.000.
Edgar, William: *See—*
Briggs, Edward Miles; Edgar, William; and Rimmer, Rodgers Eugene, 3,729,699.
Edwards, Evan A., to Eastman Kodak Company. Gear drive for a camera and film cartridge. 3,728,949, Cl. 95-31.00r.
Edwards, Richard R.: *See—*
Hopkins, Walker L.; Chvatal, Leland A.; and Edwards, Richard R., 3,729,624.
Eggenberger, Ulrich; and Nef, Heinz. Closing, locking and prestressing device for casting molds. 3,729,283, Cl. 425-450.000.
Eggermont, Ludwig Desire Johan: *See—*
de Koe, Oscar Bernardus Philomenus Rikker; and Eggermont, Ludwig Desire Johan, 3,729,717.
Eibl, Hans: *See—*
Schwarz, Otto; and Eibl, Hans, 3,729,556.
Eiselstein, Herbert L.; and Hosier, James C., to International Nickel Company, Inc., The. Iron nickel chromium alloys. 3,729,308, Cl. 75-128.00e.
Eisen, Frederic S.: *See—*
Camp, Frederick W.; Eisen, Frederic S.; Fear, James Van Dyck; and Kirk, Merritt C., Jr., 3,729,407.
Ekeson, Alfred G., to Winchell, Charles F. Wrap-around garment cover bag for luggage. 3,729,038, Cl. 150-52.00e.
Elder, James H., to General Electric Company. Receiver selecting arrangement. 3,729,681, Cl. 325-304.000.
Elder, James H., to General Electric Company. Audio signal quality indicating circuit. 3,729,682, Cl. 325-304.000.
Electric Reduction Company of Canada Ltd.: *See—*
Palmer, Malcolm George, 3,728,934.
Electricite de France: *See—*
Casalta, Jean Pierre; Dubs, Claude; and Lechevallier, Andre, 3,729,172.
Electronic Data Preparation Corporation: *See—*
Jones, David H., 3,729,620.
Ellenberger & Poensgen GmbH: *See—*
Ellenberger, Jakob, 3,729,607.
Ellenberger, Jakob, to Ellenberger & Poensgen GmbH. Pushbutton reset circuit breaker having peripheral contact condition indicator means. 3,729,607, Cl. 200-167.00r.
Elliott Brothers (London) Ltd.: *See—*
Chapman, Peter Frederick, 3,729,698.
Ellis, Myron P.; Czubak, Albin S.; and McDonald, Keith A., to Micromatic Hone Corporation. Gear honing machine. 3,728,829, Cl. 51-215.00h.
Elmendorp, Jan; and De Rooij, Abraham H., to Stamicarbon N.V. Process for the preparation of oximes. 3,729,304, Cl. 71-34.000.
Emerson Electric Co.: *See—*
Wightman, Lawrance W., 3,728,886.
Emhart Corporation: *See—*
Federko, Andrew S., 3,729,082.
Emken, Edward A., to United States of America, Agriculture. Hydroxy-conjugated fatty acids. 3,729,379, Cl. 195-30.000.
Enders, Edgar: *See—*
Wollweber, Hartmund; Stendel, Wilhelm; and Enders, Edgar, 3,729,485.
Engelking, Uwe K., to Organisation Europeenne de Recherches Spatiales. Universal nutation damper. 3,728,900, Cl. 74-5.500.
Engelstein, Stanley; and Dorman, Isidore, to Bell & Howell Company. Random-access card file system. 3,729,094, Cl. 209-80.500.
Engfer, Ortwin, to Bosch, Robert, GmbH. Pneumatic suspension for a motorcar. 3,729,211, Cl. 280-124.00f.
Engholdt, Richard K., to Erie Manufacturing Company. Method and apparatus for detecting the hardness level of water. 3,729,263, Cl. 356-184.000.
English Electric Valve Company Limited: *See—*
Pickering, Alan Hugh, 3,729,646.
English, Gary L.: *See—*
Curtis, Ronald E.; English, Gary L.; and Hense, James R., 3,728,781.
Ensmann, Burt W.; and Davis, Robert E., to Ideal Toy Corporation. Clamoring doll. 3,728,816, Cl. 46-116.000.
Enso-Gutzeit Osakeyhtio: *See—*
Paakkinen, Ilmari, 3,729,215.
Erck, Karl, to Volkswagenwerk Aktiengesellschaft. Connection of a window pane to a frame. 3,728,832, Cl. 52-400.000.
ERG Industrial Corporation Limited: *See—*
Solomon, Nigel Allan; Godfrey, Nelson Frederick John; and Boxell, Alan James, 3,729,600.
Ericsson, Ronald J.; Portage, Daniel Lednicer; and Youngdale, Gilbert A., to Upjohn Company, The. Rodent sterilant process. 3,729,566, Cl. 424-342.000.
Erie Manufacturing Company: *See—*
Engholdt, Richard K., 3,729,263.
Ernst, Herbert: *See—*
Glock, Hans; and Ernst, Herbert, 3,729,721.
Eros, Stephen; and Thrasher, Paul M., to International Business Machines Corporation. Optical receiver having a maximized signal-to-noise ratio. 3,729,633, Cl. 250-199.000.
Essig, Karl, to Stoll, H., & Company. Apparatus for reversing the traverse of the cam carriage of an automatically operating flat knitting machine. 3,728,901, Cl. 74-27.000.
Esso Research and Engineering Company: *See—*
Carter, James L.; and Sinfelt, John H., 3,729,408.
Cull, Neville Leverne; Gladrow, Elroy Merle; Mason, Ralph Burgess; and Hamner, Glen Porter, 3,729,515.
Miller, Harold N., 3,729,296.
Naschke, John H.; and Keil, Eugene O., 3,729,387.
Robson, Harry E., 3,729,429.
Esters, Ernie B. Plural stator dynamoelectric machine. 3,729,642, Cl. 310-112.000.
Evanega, George R.: *See—*
Chang, Yi Han; Evanega, George R.; and McLamore, William M., 3,729,564.
Evans, Clifford J., to Shields-Jetco, Inc. Narrow rock cutting trencher. 3,729,231, Cl. 299-7.000.
Evans, Milton L.: *See—*
Holub, Fred F.; and Evans, Milton L., 3,729,446.
Everett, Thorald E. Montague; and Charipar, Joseph, to A & M Research, Inc. Photographic processing apparatus. 3,728,954, Cl. 95-94.00r.
Extel Corporation: *See—*
Zenner, Walter J.; and Kranz, Raymond E., 3,729,079.
Fabbrica Italiana Magneti Marelli S.p.A.: *See—*
Tateo, Vito; and Galli, Guido, 3,729,665.
Failing, Jim E. Floor wax dispenser. 3,729,268, Cl. 401-137.000.
Fairchild Industries, Inc.: *See—*
Lemont, Harold E., 3,729,272.
Falk, Sidney, to Fort Lock Corporation. Rekeyable axial pin tumbler lock. 3,728,880, Cl. 70-363.000.
Fancher, Llewellyn W., to Stauffer Chemical Company. Certain 2-iminothiazol phosphates and phosphonates. 3,729,478, Cl. 260-306.700.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Boshagen, Horst; and Plempel, Manfred, 3,729,473.
Buc, Karl Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,729,562.
Leister, Heinrich; and Wolf, Karl-Heinz, 3,729,330.
Suling, Carlhans; and Logemann, Heino, 3,729,531.
Wollweber, Hartmund; Stendel, Wilhelm; and Enders, Edgar, 3,729,485.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Werner, Gerhard; Stahl, Dieter; and Lorentz, Guido Max Rudolf, 3,729,528.
Farnsworth, William J., to Altamil Corporation. Collapsible containers including swivel hinge corner assembly and access door assembly. 3,729,111, Cl. 217-16.000.
Farr, John B., to Amoco Production Company. Earth holography with special reference wave. 3,729,704, Cl. 340-15.5ds.
Farrell, John C.; and Balfanz, Thomas L., to Select Systems, Inc. Valve and seal means. 3,729,034, Cl. 141-332.000.
Feagin, Roy Chester: *See—*
Carnot, John J.; Tingquist, Stanley Carroll; Robb, Ronald Robert; and Feagin, Roy Chester, 3,729,050.
Fear, James Van Dyck: *See—*
Camp, Frederick W.; Eisen, Frederic S.; Fear, James Van Dyck; and Kirk, Merritt C., Jr., 3,729,407.
Federko, Andrew S., to Emhart Corporation. Fragmentation shield for a container processing machine. 3,729,082, Cl. 198-19.000.
Feher, Istvan: *See—*
Nagy, Zoltan; Sebestyen, Zsigmond; Szepesy, Laszlo; and Feher, Istvan, 3,728,843.
Fehmerling, Gottlieb Bernhard, to Ocean Research Corporation, mesne. Separation of edible tissue from edible flesh of marine creatures. 3,729,324, Cl. 99-111.000.
Fell, Ferol S.; Goering, Lowell J.; and Long, William D., to Hesston Corporation. Belt transmission having mechanism for reverse grinding. 3,728,905, Cl. 74-220.000.
Fernseh G.m.b.H: *See—*
Schneider, Hans-Dieter, 3,729,580.
Schneider, Hans-Dieter, 3,729,673.
Ferri, Joseph E.: *See—*
Davis, William J.; and Gilles, Richard C., 3,729,415.
Ferstenberg, Charles, to Tenneco Chemicals, Inc. Method for continuously forming elongated cylinder of polyurethane form. 3,729,534, Cl. 264-54.000.
FIAT Societa per Azioni: *See—*
Lampredi, Aurelio; Leoni, Aldo; Ghilardi, Francesco; Degiorgis, Francesco; and Joli, Luigi, 3,728,990.
Montuschi, Mario; and Palazzetti, Mario, 3,728,991.

FIC Industries, Inc.: *See—*
Taylor, William S., 3,729,667.
Field, Thomas R., to Jenn-Air Corporation. Smoke and heat relief vent. 3,728,956, Cl. 98-86.000.
Fischer, Milton G., to Deutsch Company Electronic Components Division, The. Wire stripper. 3,728,789, Cl. 30-90.100.
Fitzgerald, Dennis J.: *See—*
United States of America, National Aeronautics and Space Administration, with respect to an invention by, 3,728,861.
Fitzner, Marcel; and Butler, John D. Apparatus for processing herbs and the like. 3,729,096, Cl. 209-97.000.
Fletcher, H. E., Co.: *See—*
Fletcher, Ralph A.; and Oliver, Joseph R., 3,728,997.
Fletcher, Ralph A.; and Oliver, Joseph R., to Fletcher, H. E., Co. Apparatus for cutting stone. 3,728,997, Cl. 125-23.000.
Flider, Frank S., to Justrite Manufacturing Company. Safety container for inflammables. 3,729,122, Cl. 222-469.000.
Flory, Howard E. Harvesting sweeper. 3,728,850, Cl. 56-12.800.
Fluckiger, Max: *See—*
Looser, Ursula, nee Menge; and Fluckiger, Max, 3,728,928.
FMC Corporation: *See—*
Schlueter, David F.; and Noble, Myron C., 3,729,085.
Focella, Antonino: *See—*
Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,729,519.
Fogliacco, Vittorio: *See—*
Brambilla, Guido; and Fogliacco, Vittorio, 3,729,101.
Folkestad, Finn Enok: *See—*
Boyum, Oystein; Folkestad, Finn Enok; and Torvund, Asbjorn, 3,729,550.
Foltz, Robert E., to Lawrence Brothers, Inc. Hinge plate switch structure. 3,729,603, Cl. 200-61.700.
Formica Corporation: *See—*
Schippers, James Henry; and Chisholm, James Edwards, 3,729,241.
Forrest Paschal Machinery Company: *See—*
Stuart, Gerald L.; and Brown, John J., Jr., 3,729,084.
Fort Lock Corporation: *See—*
Falk, Sidney, 3,728,880.
Fortuna-Werke Maschinenfabrik AG: *See—*
Koppenwallner, Georg, 3,728,827.
Foster, James E.: *See—*
Carr, Earl L.; and Foster, James E., 3,729,095.
Foster, James H.; and Dufton, John Peter, to Automatic Electric Laboratories, Inc. Shift apparatus for small computer. 3,729,711, Cl. 340-172.500.
Foster, Robert C.: *See—*
Buyken, Frank E.; and Foster, Robert C., 3,729,166.
Foster, Robert C. Wall forming bracket. 3,729,159, Cl. 248-205.00r.
Fractionation Research, Inc.: *See—*
Keller, George J., 3,729,179.
Fraser, David B., to Dynasciences Corporation. Image motion compensation mechanism. 3,728,948, Cl. 95-12.500.
Frasure, James W., to Dow Chemical Company, The. Expansion joint for flow speed reaction rails. 3,729,135, Cl. 238-151.000.
Fraze, Ermal C. Scoring die. 3,728,980, Cl. 113-1.000.
Fredrickson, Wallace F. Baler. 3,728,959, Cl. 100-218.000.
Freedman, Gerald Allen. Cue tip trimmer. 3,728,828, Cl. 51-204.000.
Freiburger, Joseph Anthony. Shiftable ladder installation. 3,729,062, Cl. 182-39.000.
Freitag, Lawrence F.: *See—*
Callan, John E.; and Freitag, Lawrence F., 3,729,657.
French, John B.; and Schroeder, Hubert J. Labeling machine. 3,729,362, Cl. 156-542.000.
Frey, Gerald J.: *See—*
Frey, Gerald J.; and Peterson, Gary E. (said Peterson assor. to said), 3,729,254.
Frey, Gerald J.; and Peterson, Gary E., said Peterson assor. to said Frey, Gerald J. Slide Projector for unsupported flexible slide holders. 3,729,254, Cl. 353-109.000.
Fricker, David C.; and Whittaker, Thomas F., to ECC Corporation. Shunt RMS voltage regulator. 3,729,651, Cl. 317-16.000.
Friedman, Sol. Drinking straw. 3,729,136, Cl. 239-33.000.
Froning, H. R., to Amoco Production Company. Method for increasing permeability of oil-bearing formations. 3,729,053, Cl. 166-304.000.
Frosst, Charles E., & Co.: *See—*
Wasson, Burton Kendall, 3,729,469.
Wasson, Burton Kendall, 3,729,477.
Fuchs, Werner: *See—*
Merger, Franz; Fuchs, Werner; Duembgen, Gerd; and Oberhansberg, Joachim, 3,729,506.
Fujidae Rubber Industry Co., Ltd.: *See—*
Hirasawa, Yaichiro; and Ousuga, Masakatu, 3,728,803.
Fujimoto, Yasuo; Nagaoka, Koichi; and Tatsukawa, Keizo, to Kyowa Hakko Kogyo Co., Ltd. Glutamic acid polymer adherents. 3,729,366, Cl. 161-89.000.
Fujiwara, Hisao; Sakamoto, Kentaro; and Wada, Goro, to Kabushiki Kaisha Keiaisha Seisakusho. Buffer device of a robot machine for controlling the rotational movement of a robot arm. 3,729,073, Cl. 188-303.000.
Fukin, Konstantin Konstantinovich: *See—*
Domrachev, Georgy Alexeevich; Melnikov, Valery Vasilievich; Kazarinov, Georgy Borisovich; Skorik, Gleb Alexandrovich; and Fukin, Konstantin Konstantinovich, 3,729,335.
Fukuhara, Kazuto: *See—*
Hashimoto, Kametaro; Nakamura, Hiroo; Okada, Toshio; Tanaka, Misugu; and Fukuhara, Kazuto, 3,729,417.
Fukushima, Tsutomu: *See—*
Ando, Ryo; Fukushima, Tsutomu; Bando, Masayoshi; and Honda, Akira, 3,729,183.
Fuller Company: *See—*
Matweecha, David M., 3,729,175.
Fuller, Harry V., to United States of America, National Aeronautics and Space Administration. Cable restraint. 3,729,068, Cl. 188-65.100.
Fullerton, Arthur M.: *See—*
Makinson, Clifford; and Fullerton, Arthur M., 3,728,793.
Furnell, Dennis Leslie, to Aktiebolaget Electrolux. Vacuum cleaner. 3,729,275, Cl. 417-424.000.
Gaetano, Salvatore. Intermittently flashing warning light. 3,729,707, Cl. 340-81.00r.
Gagliardi, Richard P.: *See—*
Beans, Allen F.; Eddowes, Alfred M.; Gagliardi, Richard P.; and Koos, Edward E., 3,729,739.
Galiano, Francis R.: *See—*
Harwell, Kenneth E.; and Galiano, Francis R., 3,729,455.
Galiano, Francis R.; and Greenlee, Norman A., to Gulf Research & Development Company. Method of recovering copolymers. 3,729,450, Cl. 260-78.50t.
Galli, Guido: *See—*
Tateo, Vito; and Galli, Guido, 3,729,665.
Gallin, Paul G. Chin straps for caps and the like. 3,729,010, Cl. 132-58.000.
Galloway, Gene C.: *See—*
Tomlinson, George A., Jr.; Long, Tommie J.; and Galloway, Gene C., 3,729,230.
Gallup, Palmer C.: *See—*
Lamborn, Homer C.; Gallup, Palmer C.; and Kao, Paul W., 3,728,883.
Gamon-Calmet Industries, Inc.: *See—*
Young, Robert Leonard; and Seltzer, Daniel Arron, 3,729,727.
Gardner, John F.; and Parry, Michael B., to Xerox Corporation. Cut and deflect web drive apparatus. 3,728,920, Cl. 83-106.000.
Garrett, Jim C.; Johnson, Robert H.; and Shelton, Jack. Telephone trunk-monitoring probe instrument. 3,729,597, Cl. 179-175.000.
Gates & Sons, Inc.: *See—*
Gates, Robert C., 3,728,836.
Gates, Robert C., to Gates & Sons, Inc. Concrete form tie and rebar chair. 3,728,836, Cl. 52-687.000.
Gates Rubber Company, The: *See—*
Nichols, Kenneth E., 3,728,857.
Gault, Robert, to J.R.A. Steel Processing Limited. Cutting blades for powered carving knives. 3,728,792, Cl. 30-355.000.
Gautraud, Michael G.: *See—*
Conklin, Robert M.; Anderson, Robert I.; Gautraud, Michael G.; and Shimanski, William H., 3,729,315.
Gelfenbein, Evgeny Jukhimovich; Karlinsky, Stanislav Evgenievich; Niskovskikh, Vitaly Masimovich; and Khimich, Georgy Lukich. Continuous metal-casting plant. 3,729,048, Cl. 164-282.000.
Geller, Martin R.; and Goldman, David A. Annunciator system. 3,729,729, Cl. 340-244.00c.
General Electric Co.: *See—*
Harnden, John D., Jr.; and Kronrumpf, William P., 3,728,947.
General Electric Company: *See—*
Baskerville, Ralph J.; and Yen, Patrick P., 3,729,065.
Berger, Abe, 3,729,496.
Bogert, Ernest H., 3,729,606.
Buell, Donald F., 3,729,577.
Dewey, Clyde G., 3,729,670.
Elder, James H., 3,729,681.
Elder, James H., 3,729,682.
Gowdy, Harold W., 3,728,805.
Grubb, Willard T.; and Macur, Robert A., 3,729,332.
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,729,616.
Hibbs, Louis E., Jr., 3,729,294.
Holub, Fred F.; and Evans, Milton L., 3,729,446.
Kelling, Leroy U. C., 3,729,623.
Liberti, Frank N., 3,729,440.
Mankoff, Lawrence L.; and Spinanger, Thomas S., 3,729,653.
Redington, Rowland W., 3,729,645.
Rohrback, Gilson H.; and Canfield, James H., 3,729,501.
Schaller, David R., 3,729,247.
St. Clair, John G., 3,729,652.
Stern, Hansjoerg, 3,728,894.
Thrulow, Wallace; and Trapasso, Louis S., 3,729,626.
Ward, William J., III, 3,729,400.
General Engineering Company (Radcliffe) Limited: *See—*
Hill, Alan Harvey, 3,729,539.
General Foods Corporation: *See—*
Linn, Stephen; and Bardsley, Robert F., 3,729,327.
General Heat Sealing Corporation: *See—*
Swartz, Henry D., 3,729,357.
General Motors Corporation: *See—*
Bleil, Carl E., 3,729,291.
Clark, William B., 3,728,915.
General Time Corporation: *See—*
Preiser, Ralph H., 3,728,855.
General Tire & Rubber Company, The: *See—*

Cobbledick, David S., 3,729,370.
Phillips, Wendell O., 3,729,436.

Genovese, Eugene Ronald: *See—*
Ahearn, William E.; Almasi, George Stanley; and Genovese, Eugene Ronald, 3,729,724.

Gerhard Collardin GmbH: *See—*
Gotta, Hans; and Schulz, Norbert, 3,729,346.

Gerken, Carl F., to American Standard, Inc. Curved track with plastic liner. 3,729,044, Cl. 160-201.000.

Gewerkschaft Eisenhutte Westfalia: *See—*
Hidasi, Istvan, 3,728,863.

Gey, William A., to United States of America, Navy. Composition for forming cloud of incapacitating agent upon detonation. 3,729,350, Cl. 149-21.000.

Ghilardi, Francesco: *See—*
Lampredi, Aurelio; Leoni, Aldo; Ghilardi, Francesco; Degiorgis, Francesco; and Joli, Luigi, 3,728,990.

Gibbs, Robert K. Composite container. 3,729,112, Cl. 220-17.000.

Gibson, Cleo E.; and Gibson, Lee Ben. Soap cone and holder. 3,729,421, Cl. 252-90.000.

Gibson, Lee Ben: *See—*
Gibson, Cleo E.; and Gibson, Lee Ben, 3,729,421.

Gilles, Richard C.: *See—*
Davis, William J.; and Gilles, Richard C., 3,729,415.

Gillett, Brian Arthur: *See—*
Collins, Donald Louis William; and Gillett, Brian Arthur, 3,729,097.

Gillie, Frances Burton. Simulated bow tie and method of making same. 3,728,737, Cl. 2-151.000.

Gladrow, Elroy Merle: *See—*
Cull, Neville Leverne; Gladrow, Elroy Merle; Mason, Ralph Burgess; and Hamner, Glen Porter, 3,729,515.

Glasbergen, Johannes Wilhelmus; Greefkes, Johannes Anton; de Jager, Frank; and van den Enden, Adrianus Wilhelmus Maria, to U.S. Philips Corporation. PCM system including a pulse pattern analyzer. 3,729,678, Cl. 325-38.000.

Glassman, David M., to Eastman Kodak Company. Information storage and retrieval system. 3,729,712, Cl. 340-172.500.

Gleicher, Joseph, to Avon Products, Inc. Loose powder dispenser. 3,729,011, Cl. 132-83.00b.

Glenoit Mills, Inc.: *See—*
Thore, Thomas J., 3,728,872.

Glick, Arthur, to American Cyanamid Company. Storage stable surgically absorbable polyglycolic acid products. 3,728,839, Cl. 53-21.0fc.

Global Erectors, Inc.: *See—*
Lodjic, Carl L., 3,728,754.

Glock, Hans; and Ernst, Herbert, to Siemens Aktiengesellschaft. Circuit arrangement for reading and writing in a bipolar semiconductor memory. 3,729,721, Cl. 340-173.0ff.

Godard, Bruno; and Lacour, Bernard, to Compagnie Generale d'Electricite, mesne. Traveling wave excited gas laser. 3,729,689, Cl. 331-94.500.

Godfrey, Nelson Frederick John: *See—*
Solomon, Nigel Allan; Godfrey, Nelson Frederick John; and Boxell, Alan James, 3,729,600.

Godo Shusei Kabushi Kaisha: *See—*
Imai, Tomio; Takahashi, Masao; Seki, Nobuyuki; and Irie, Yoshio, 3,729,378.

Goeldner, Richard W., to Aqua-Chem, Inc. Flash evaporator structure. 3,729,383, Cl. 202-173.000.

Goering, Lowell J.: *See—*
Fell, Ferol S.; Goering, Lowell J.; and Long, William D., 3,728,905.

Goettling, Douglas B.: *See—*
Rigot, Robert M.; and Goettling, Douglas B., 3,728,882.

Goforth Brothers, Inc.: *See—*
Goforth, Samuel P.; and Goforth, Joseph A., 3,728,969.
Goforth, Samuel P.; and Goforth, Joseph A., 3,728,972.

Goforth, Joseph A.: *See—*
Goforth, Samuel P.; and Goforth, Joseph A., 3,728,969.
Goforth, Samuel P.; and Goforth, Joseph A., 3,728,972.

Goforth, Samuel P.; and Goforth, Joseph A., to Goforth Brothers, Inc. Stabilizing means for tram cars. 3,728,969, Cl. 104-28.000.

Goforth, Samuel P.; and Goforth, Joseph A., to Goforth Brothers, Inc. Tension means for aerial tramways. 3,728,972, Cl. 104-117.000.

Goheen, Richard H., to Aluminum Company of America. Purification of sodium aluminate liquor. 3,729,542, Cl. 423-119.000.

Gold, David; Misek, Bernard; and Braun, Norman, to Richardson-Merrell, Inc. Packaged effervescent composition. 3,729,553, Cl. 424-44.000.

Goldbach, Horst; Brandenburg, Rudolf; and Dabringhausen, Erich, to Arn Kiekert Sohne. Vehicle doors. 3,728,819, Cl. 49-216.000.

Goldman, David A.: *See—*
Geller, Martin R.; and Goldman, David A., 3,729,729.

Goldsberry, Clyde D.: *See—*
Huey, John Robert; Wurzburg, Otto B.; and Goldsberry, Clyde D., 3,728,817.

Goldsmith, James R.; Kruesi, Paul R.; and Masarky, Henri, to Molybdenum Corporation of America. Method for the recovery of rare earth metal alloys. 3,729,397, Cl. 204-64.00r.

Gordon, David A.: *See—*
Seltzer, Raymond; and Gordon, David A., 3,729,448.

Gorin, Everett, to Consolidated Coal Company. Conversion of calcium sulfate to calcium oxide and elemental sulfur. 3,729,551, Cl. 423-638.000.

Gorman, Susan B.: *See—*
Wolf, Richard E.; and Gorman, Susan B., 3,729,483.

Gormley, Ian Gavin: *See—*
Hutt, Peter Murray Bruce; and Gormley, Ian Gavin, 3,729,195.

Gotta, Hans; and Schulz, Norbert, to Gerhard Collardin GmbH. High-pressure spray process for phosphating iron or steel surfaces. 3,729,346, Cl. 148-6.15z.

Gottlob, Heinrich: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,728,765.

Gottscho, Adolph, Inc.: *See—*
Sherrington, John E., 3,728,962.

Gould, Henry: *See—*
Bruson, Herman A.; and Gould, Henry, 3,729,432.

Gowdy, Harold W., to General Electric Company. Multi-function steam iron. 3,728,805, Cl. 38-77.830.

Grace, W. R. & Co.: *See—*
Kehr, Clifton L.; and Wszolek, Walter R., 3,729,403.
Morgan, Charles Robert, 3,729,404.
Westfall, Wayne L.; Kramm, David E.; and Sanchez, Moises G., 3,729,256.

Gradnik, Boris, to MIDY. Antibiotic composition. 3,729,555, Cl. 424-114.000.

Grakauskas, Vytautas, to Aerojet-General Corporation. Bis-n-n-difluorocarbamates. 3,729,504, Cl. 260-482.00b.

Granberg, Elof. Sighting device. 3,729,199, Cl. 273-183.00b.

Grandio, Philip, Jr.; and Allen, Paul T., to Mobil Oil Corporation. Recovery of isomers from aromatic mixtures. 3,729,523, Cl. 260-674.00a.

Granig, Hubert. Collision actuated bumper. 3,729,221, Cl. 293-9.000.

Granville, William Francis; deceased (by Granville, Winifred Mary; executrix). Infinitely variable speed transmissions. 3,728,911, Cl. 74-752.00f.

Granville, Winifred Mary: *See—*
Granville, William Francis, 3,728,911.

Grasenick, Fritz; and Jakopic, Erich. Method for producing preparations for electromicroscopic examination. 3,729,629, Cl. 250-49.5te.

Gratzke, Werner, to Siemens Aktiengesellschaft. Protective circuit arrangement for a switching transistor in an inductive load circuit. 3,729,655, Cl. 317-33.00r.

Gray, Richard G., to Magnetic Head Corporation. Combined battery charger and automatic ignition booster. 3,729,637, Cl. 307-10.0bp.

Greefkes, Johannes Anton: *See—*
Glasbergen, Johannes Wilhelmus; Greefkes, Johannes Anton; de Jager, Frank; and van den Enden, Adrianus Wilhelmus Maria, 3,729,678.

Green, Edward H.; and Benedict, Herbert, to Green, Edward H., mesne. Reusable tamperproof cap for aerosol dispensing containers. 3,729,116, Cl. 220-60.00r.

Green, Edward H., mesne: *See—*
Green, Edward H.; and Benedict, Herbert, 3,729,116.

Green, Norman: *See—*
McGill, Robert L., Jr.; Worsham, Charles R.; and Green, Norman, 3,729,587.

Greene, Charles W., to Deering Milliken Research Corporation. Endless reinforcement and method for producing same. 3,729,365, Cl. 161-57.000.

Greenlee, Norman A.: *See—*
Galiano, Francis R.; and Greenlee, Norman A., 3,729,450.

Greenwood, Robert P.; and Tiley, William L., to United States Steel Corporation. Slipping cope assembly. 3,729,049, Cl. 164-352.000.

Gribou, Henry G.; and Schleppnik, Alfred A., to Monsanto Company. Aromatic esters of terpene alcohols. 3,729,503, Cl. 260-476.00c.

Griesbaum, Karl: *See—*
Heimberger, Helmut; and Griesbaum, Karl, 3,728,979.

Grijalva, Victor E., to Schlumberger Technology Corporation. Methods and apparatus for acoustic logging in cased well bores. 3,729,705, Cl. 340-18.0ac.

Grinonneau, William C.: *See—*
Kiel, Robert H.; and Grinonneau, William C., 3,729,339.

Griswold, Edward A. Electrostatic filter for cleaning dielectric fluids. 3,729,402, Cl. 204-302.000.

Groff, Eugene R.; and Welsh, James P., to Caterpillar Tractor Co. Diaphragm seal with fluid filled cavity for paddle or fluid flow responsive switch. 3,729,604, Cl. 200-81.90r.

Gross Cash Registers Limited: *See—*
Gross, Henry; and Gross, Samuel, 3,728,961.

Gross, Henry; and Gross, Samuel, to Gross Cash Registers Limited. Arrangement for electromagnetically setting drum series print wheels. 3,728,961, Cl. 101-99.000.

Gross, Samuel: *See—*
Gross, Henry; and Gross, Samuel, 3,728,961.

Grossman, Abraham. Frame construction having arcuate corners and a continuous feature strip. 3,728,833, Cl. 52-211.000.

Grossman, James Douglas; and Light, Kenneth K., to International Flavors and Fragrances, Inc. Perfume compositions. 3,729,430, Cl. 252-522.000.

Grubb, Willard T.; and Macur, Robert A., to General Electric Company. Microporous polyolefin ink-receptive paper and method. 3,729,332, Cl. 117-11.000.

Grube, William L., to MacLean-Fogg Lock Nut Co. Means and method for controlling tension in a threaded member. 3,728,933, Cl. 85-61.000.

Grunig, James K.; Anderson, Rodney J.; and Vance, Bess L., to Anaconda Company, The. Recovery of beryllium. 3,729,541, Cl. 423-112.000.

Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., to General Electric Company. Electrically heated window. 3,729,616, Cl. 219-522.000.

GTE Automatic Electric Laboratories Incorporated: *See—*
Buedel, Charles Kenneth, 3,729,715.
Dufton, J. Peter; and Hallman, Beverley G., 3,729,718.
Jeffery, Thomas H.; and Kuster, Karl H., 3,729,671.
Krock, Elmer W.; and Simon, Charles J., 3,729,594.
Macrander, Max S., 3,729,638.
Shuba, Joseph Patrick, 3,729,722.

Guangorena, Jesus; and Kaila, Edward, to Barient Company. Three speed deck winch. 3,728,914, Cl. 74-812.000.

Gueldenpfennig, Klaus; and Russell, Stanley L., to Stromberg-Carlson Corporation. Path finding system for a multi-stage switching network. 3,729,591, Cl. 179-18.0ge.

Gueret, Herve: *See—*
Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., 3,728,989.

Gulf Research & Development Company: *See—*
Blecke, Ronald G.; and Hill, Robert W., 3,729,451.
Galiano, Francis R.; and Greenlee, Norman A., 3,729,450.

Gulf Research and Development Company: *See—*
Harwell, Kenneth E.; and Galiano, Francis R., 3,729,455.

Gulich, Tore. Flushing unit. 3,729,167, Cl. 251-39.000.

Gump, Klaus H.; and Stuetz, Dagobert E., to Celanese Corporation. Process for the formation of stabilized and carbonized acrylic fibrous material. 3,729,549, Cl. 423-447.000.

Gundisch, Gusztav: *See—*
Horvath, Laszlo; Gundisch, Gusztav; Arvai, Mihaly; and Antal, Sandor, 3,729,028.

Gunto, Robert L.; and Staley, Merton R., to Addressograph-Multigraph Corporation. Means and methods for exposing photoelectrostatic materials. 3,729,257, Cl. 355-67.000.

Gutberlet, Louis C.; Bertolacini, Ralph J.; and Brennan, Harry M., to Standard Oil Company. Process for the disproportionation of petroleum hydrocarbons. 3,729,521, Cl. 260-672.00t.

Gutehoffnungshutte Sterkrade Aktiengesellschaft: *See—*
Andra, Wolfhart; Beyer, Erwin; Leonhard, Fritz; Thul, Heribert; and Winter-Gerst, Louis, 3,728,752.

Gutmann, Siegfried. Butt joining of steel bars and connection assembly therefor. 3,729,218, Cl. 287-109.000.

Haas, Howard C., to Polaroid Corporation. Novel photographic processes and products. 3,729,314, Cl. 96-29.00d.

Habegger, Millard A.; and Sincerbox, Glenn T., to International Business Machines Corporation. Method and apparatus for large object interference pattern recording. 3,729,249, Cl. 350-3.500.

Haberland, Ulrich; Lenz, Gunther; Schell, Hermann; and Weirauch, Kurt, to Bayer Aktiengesellschaft. Flameproof high molecular aromatic polyester-carbonates. 3,729,447, Cl. 260-47.0xa.

Hacker, Harold R. Vibratory straight line feeder. 3,729,090, Cl. 198-220.0cb.

Haddad, Nadim F.: *See—*
Castrucci, Paul P.; Haddad, Nadim F.; and Pecoraro, Raymond P., 3,729,316.

Haff, Peter Robert, to Mosel-Anstalt. Collar for upright members and stand with such collar. 3,729,157, Cl. 248-44.000.

Hagerman, Gosta Lund, to Aktiebolaget Leo (A/B Leo). Treatment of hair and scalp with compositions containing estriol. 3,729,560, Cl. 424-238.000.

Hagopian, Haroutun. Sanitary siphon bidet. 3,728,743, Cl. 4-7.000.

Hahto, Charles; and Schneirow, Harry A. Game score display device. 3,729,216, Cl. 281-45.000.

Haid, Hans: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,728,765.

Hall, Bertie Forrest, Jr., to Wolgast, Raymond P. Vacuum cup. 3,728,891, Cl. 72-465.000.

Hall, John B., to International Flavors & Fragrances Inc. Novel chemical compounds and process. 3,729,514, Cl. 260-598.000.

Hall Ski-Lift Company, Inc.: *See—*
Savage, Phillip D., 3,729,225.

Haller, Richard. Device for supporting an elongated movable member. 3,728,903, Cl. 74-89.150.

Hallman, Beverley G.: *See—*
Dufton, J. Peter; and Hallman, Beverley G., 3,729,718.

Hamilton Kent Manufacturing Company, mesne: *See—*
Mason, Mark T.; and Wood, Kenneth G., 3,729,266.

Hammann, Ingeborg: *See—*
Buc, Karl Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,729,562.

Hammond, Harry H., to Hansen Manufacturing Company, The. Coupling assembly. 3,729,023, Cl. 137-614.030.

Hamner, Glen Porter: *See—*
Cull, Neville Leverne; Gladrow, Elroy Merle; Mason, Ralph Burgess; and Hamner, Glen Porter, 3,729,515.

Hano, Masaaki, to Nippon Kokan Kabushika Kaisha. Tack-welding method and installation. 3,729,125, Cl. 228-26.000.

Hansen Manufacturing Company, The: *See—*
Hammond, Harry H., 3,729,023.

Hara, Nobito: *See—*
Yoshida, Fujio; Akamatsu, Kagesumi; and Hara, Nobito, 3,729,297.

Harbaugh, Arthur: *See—*
Harrell, Bob G.; and Harbaugh, Arthur, 3,729,246.

Harding, Maynard Caldwell; and Payne, Joseph Armando, to Litton Systems, Inc. High voltage insulator having a thick film resistive coating. 3,729,575, Cl. 174-138.00r.

Hardway, Edward V., Jr., to Spearhead, Inc. Capacitive switching device. 3,729,728, Cl. 340-200.000.

Hardy, Sheila. Collapsable shaft for point spray booth. 3,729,147, Cl. 242-72.000.

Harmon, Albert D.: *See—*
Anderson, Gordon C.; and Harmon, Albert D., 3,728,852.

Harnden, John D., Jr.; and Kronrumpf, William P., to General Electric Co. Static electronic photoflash assembly and method of photoflash lighting. 3,728,947, Cl. 95-11.50r.

Harrah, Robert S. Monitoring apparatus responsive to operation of cooperative equipment at more than a predetermined rate. 3,729,024, Cl. 137-624.130.

Harrell, Bob G.; and Harbaugh, Arthur, to Jackes-Evans Manufacturing Company. Knock-down drawer. 3,729,246, Cl. 312-330.000.

Harris, Earl D.; and Wirsing, Richard L., to Warner & Swasey Company, The. Rotating arm sheet unloader-stacker. 3,729,190, Cl. 271-85.000.

Harris, John L., to Deltrol Corporation. Condition control device and system. 3,729,615, Cl. 219-486.000.

Harris, Robert E.; and Moseley, William R., to Mobil Oil Corporation. Dewaxing and deoiling process. 3,729,414, Cl. 210-66.000.

Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, to Boots Pure Drug Company Limited. Aphicidal and acaricidal compositions containing N-2,4 dimethylphenyl-N'-methylformamidine or its acid addition salts and methods of use. 3,729,565, C. 424-326.000.

Hartigan, Edward G.; Patience, Donald; and Knohl, Herbert, to Kendall Company, The. Stocking with soft inner thigh area. 3,728,875, Cl. 66-172.00e.

Haruki, Tatsuro; and Itaya, Muneaki, to Shimadzu Seisakusho Ltd. Method and apparatus for stripping the components of a mixed sample from a trap. 3,728,845, Cl. 55-67.000.

Harwell, Kenneth E.; and Galiano, Francis R., to Gulf Research and Development Company. Electroconductive method for controlling organometallic catalytic polymerizations. 3,729,455, Cl. 260-80.700.

Hashimoto, Kametaro; Nakamura, Hiroo; Okada, Toshio; Tanaka, Misugu; and Fukuhara, Kazuto, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nippon Grease Co., Ltd. Quenching oil compositions. 3,729,417, Cl. 252-46.600.

Hathaway, Milton R., Jr. Pickup truck camper device. 3,729,224, Cl. 296-23.0mc.

Hathway, Randal B.: *See—*
Whitney, Charles A.; Somerset, James P.; and Hathway, Randal B., 3,729,669.

Hattori, Tadashi: *See—*
Takai, Nobuyoshi; and Hattori, Tadashi, 3,728,906.

Hatz, Ernst; and Samitz, Erwin, to Motorenfabrik Hatz KG. Injection pump with regulation of injection timing. 3,729,274, Cl. 417-387.000.

Hautala, Earl: *See—*
Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., 3,729,323.

Hayashi, Katsumi, to Lubrizol Corporation, The. Polyols and polyurethanes derived from 5-pentanolides. 3,729,505, Cl. 260-484.00a.

Hayashibara Company: *See—*
Sugimoto, Kaname; and Yoshida, Mikihiko, 3,729,380.

Hayssen Manufacturing Company: *See—*
Vogel, Walter H., 3,728,921.

Heald, Jesse H., Jr., to Worth Bat Company, Inc. Metal bat. 3,729,196, Cl. 273-72.00a.

Heard, Roderick S., to International Business Machines Corporation. Proportional space character display including uniform character expansion. 3,729,714, Cl. 340-172.500.

Hearn, John R., to Hewlett-Packard Company. Acousto-optic filter having electrically variable resolution. 3,729,251, Cl. 350-149.000.

Heath Company: *See—*
Covert, Garry C., 3,729,133.

Heath, Howard W., to Heath Printers, Inc. Rotary number printer with end-wise withdrawal for accessibility. 3,728,960, Cl. 101-76.000.

Heath Printers, Inc.: *See—*
Heath, Howard W., 3,728,960.

Heaton, Richard A.; and Sachs, Maurice J., to Owens-Illinois, Inc. Method of shaping glass. 3,729,301, Cl. 65-81.000.

Heaton, Richard A., to Owens-Illinois, Inc. Removal of glass article from ribbon forming machine by vibrating force. 3,729,302, Cl. 65-105.000.

Hechenbleikner, Ingenuin A., to Carlisle Chemical Works, Inc. Liquid 2-hydroxy-4-alkoxybenzophenone ultraviolet light stabilizers for polymers. 3,729,442, Cl. 260-45.95f.

Heck, Friedrich, to Duria-Werk Karl Kempf KG and Aktiengesellschaft Adolph Saurer. Anti friction bearing pad. 3,729,292, Cl. 29-182.300.

Hecker, Klaus J., to United States of America, Navy. Remote target acquisition and lock-on system. 3,729,151, Cl. 244-3.140.

Hecker, Robert W., Jr.: *See—*
Beckwith, Robert C.; and Hecker, Robert W., Jr., 3,728,753.
Heffel, James R.: *See—*
Bey, Alvin E.; and Heffel, James R., 3,729,444.
Hegar, Gert, to Ciba-Geigy AG. Basic monoazo dyestuffs. 3,729,459, Cl. 260-205.000.
Hehl, Karl. Injection molding unit. 3,729,280, Cl. 425-251.000.
Heimberger, Helmut; and Griesbaum, Karl, to Opti-Holding AG. Method of producing slide-fastener stringers. 3,728,979, Cl. 112-265.000.
Hein, George P. Portable traffic control system with television monitoring. 3,729,706, Cl. 340-31.00r.
Hein, John E. Telescoping ladder. 3,729,063, Cl. 182-156.000.
Heine, Helmut A., to Optotechnik G.m.b.H. and Propper Manufacturing Company, Inc. Otoscope. 3,728,998, Cl. 128-9.000.
Heineken Brouwerijen N.V.: *See—*
Sijkema, Leendert Frederik Willem, 3,728,899.
Heinemann Electric Company: *See—*
Pope, Ralph, 3,729,696.
Heinouchi, Yosiaki; Tabuchi, Keizo; and Tatsumi, Tetsuo, to Murata Manufacturing Co., Ltd. Piezoelectric igniter. 3,729,639, Cl. 310-8.300.
Heinz, Arnold: *See—*
Bruning, Jurgen; Eckert, Hans-Werner; and Heinz, Arnold, 3,729,416.
Helin, Charles J. Split outlet plate. 3,729,572, Cl. 174-66.000.
Heller, Carl A.; Richter, Herbert P.; and McEwan, William S., to United States of America, Navy. Porous chemiluminescent material and method of manufacture. 3,729,425, Cl. 252-188.3cl.
Heller, Hansjorg: *See—*
Peterli, Hans Jakob; and Heller, Hansjorg, 3,729,443.
Helm, Herbert W., to Smithe, F. L., Machine Company, Inc. Rotatable panel cutter. 3,728,918, Cl. 83-22.000.
Hemme, William R., to Collins Radio Company. VOR 9960 Hz harmonic generator. 3,729,683, Cl. 328-16.000.
Henkel & Cie G.m.b.H.: *See—*
Bruning, Jurgen; Eckert, Hans-Werner; and Heinz, Arnold, 3,729,416.
Lepper, Herbert; Umbach, Wilfried; and Stein, Werner, 3,729,518.
Rutzen, Horst; and Rittmeister, Wilhelm, 3,729,520.
Henrick, Clive A.: *See—*
Siddall, John B.; and Henrick, Clive A., 3,729,486.
Henrie, Thomas A.; and Murphy, James Eugene, to United States of America, Interior. Purification of rare-earth metals. 3,729,306, Cl. 75-10.000.
Henry, George Ronald: *See—*
Morris, Martin; and Henry, George Ronald, 3,729,329.
Hense, James R.: *See—*
Curtis, Ronald E.; English, Gary L.; and Hense, James R., 3,728,781.
Herbes, William Frank: *See—*
Stockel, Richard Frederick; and Herbes, William Frank, 3,729,516.
Hergeth, Herbert, to Hergeth Maschinenfabrik und Apparatebau. Apparatus for regulating the supply of fibrous material fed to processing machines. 3,728,759, Cl. 19-105.000.
Hergeth Maschinenfabrik und Apparatebau: *See—*
Hergeth, Herbert, 3,728,759.
Herramann, William Christian: *See—*
Keyes, Richard Martin; and Herramann, William Christian, 3,729,177.
Herter, Hermann; and Scherf, Adolf, to Mannesmann Aktiengesellschaft. Apparatus for radially expanding the end portion of a tube made of thermoplastic synthetic material. 3,729,282, Cl. 425-393.000.
Hesston Corporation: *See—*
Fell, Ferol S.; Goering, Lowell J.; and Long, William D., 3,728,905.
Lundahl, Ezra Cordell, 3,728,849.
Hewlett-Packard Company: *See—*
Band, Ian T., 3,729,677.
Hearn, John R., 3,729,251.
Kusters, John A.; Wilson, David A.; and Hubby, Laurence M., Jr., 3,729,250.
Hibbs, Louis E., Jr., to General Electric Company. Zinc diffused copper. 3,729,294, Cl. 29-195.000.
Hicks, Terence Alan: *See—*
Williamson, William Robert Nigel; Hicks, Terence Alan; and Day, Elaine Hilda, 3,729,475.
Hidasi, Istvan, to Gewerkschaft Eisenhutte Westfalia. Mine roof support assemblies. 3,728,863, Cl. 61-450.000.
Hildebrandt, Guillermo J.; Maugel, Theodore R.; Morgan, Albert R.; and Stern, Boris A., to Celotex Corporation, The. Weather-stabilized asbestos roofing felt. 3,729,373, Cl. 162-123.000.
Hilger, Anthony G.: *See—*
Behlen, Walter D.; and Hilger, Anthony G., 3,728,779.
Hill, Alan Harvey, to General Engineering Company (Radcliffe) Limited and British Insulated Callender's Cables Limited. Cooling of plastic extrusions of small cross-sectional area. 3,729,539, Cl. 264-89.000.
Hill, Robert W.: *See—*
Blecke, Ronald G.; and Hill, Robert W., 3,729,451.
Hills, William H.: *See—*
Doleman, Jack; and Hills, William H., 3,729,364.
Himmelmann, Wolfgang; Bergthaller, Peter; Quiring, Bernd; and Wagner, Kuno, to Agfa-Gevaert Aktiengesellschaft. Process for cross-linking silver halide gelatino emulsion layer containing non-diffusible compound having epoxide and isocyanate groups. 3,729,38, Cl. 96-111.000.
Hines, Benjamin M.; and Johnson, Richard I., to Timely Products Corporation. Golfer's head movement indicator. 3,729,200, Cl. 273-183.00b.
Hinkle, Charles J.; and Marquardt, Frank R., to United States of America, Navy. Tri-pri three contact primer. 3,728,967, Cl. 102-46.000.
Hinnen, Hermann, to Schweizerische Lokomotiv- und Maschinenfabrik. Railway car steering bogies. 3,728,973, Cl. 105-176.000.
Hiraguri, Tsuyoshi: *See—*
Naito, Nobuyoshi; Hiraguri, Tsuyoshi; Yamashita, Katsunori; and Honda, Oomi, 3,729,117.
Hirasawa, Yaichiro; and Ousuga, Masakatu, to Fujidae Rubber Industry Co., Ltd. Infant shoes. 3,728,803, Cl. 36-2.50e.
Hiriba Ltd.: *See—*
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, 3,829,264.
Hirota, Nobuyoshi, to Mitsubishi Jukogyo Kabushiki Kaisha. Solid acid containing peeling type picking composition. 3,729,423, Cl. 252-142.000.
Hirzel, Edgar A., to Crane Co. Brake control modulator. 3,729,234, Cl. 303-21.0be.
Hitachi, Limited: *See—*
Yokoyama, Etsuzo; and Oono, Yausya, 3,729,601.
Hitachi, Ltd.: *See—*
Inoue, Masaru, 3,729,625.
Sato, Hiroshi; and Toshima, Hisashi, 3,729,641.
Tanaka, Mitsuo; and Honda, Akira, 3,729,692.
Hobbs, Derek John: *See—*
Cooper, Brian Sydney; Cronk, John Edward; and Hobbs, Derek John, 3,729,259.
Hobson and Motzer: *See—*
Motzer, Alfred E., 3,728,888.
Hoffmann-La Roche Inc.: *See—*
Bernauer, Karl; Borgulya, Janos; and Bohni, Erika, 3,729,492.
Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,729,519.
Hofmeister, Helmut; Steinbeck, Hermann; and Wiechert, Rudolf, to Schering Aktiengesellschaft. 7α-Methylandrostenolones. 3,729,494, Cl. 260-397.400.
Hogg, James W. Holder assembly for cables and method. 3,728,762, Cl. 24-129.00c.
Hoke, Donald Irvin, to Lubrizol Corporation, The. Polymers of N-3-hydroxyalkyl acrylamides and method of preparation. 3,729,456, Cl. 260-85.700.
Holly, James A., to Hollymatic Corporation. Fastener. 3,728,761, Cl. 24-73.000.
Hollymatic Corporation: *See—*
Holly, James A., 3,728,761.
Holmquest, Wesley R. Bale twine cutter. 3,728,791, Cl. 30-294.000.
Holub, Fred F.; and Evans, Milton L., to General Electric Company. Imido-substituted polyester compositions. 3,729,446, Cl. 260-47.0cz.
Honda, Akira: *See—*
Ando, Ryo; Fukushima, Tsutomu; Bando, Masayoshi; and Honda, Akira, 3,729,183.
Tanaka, Mitsuo; and Honda, Akira, 3,729,692.
Honda, Hidemi; and Morita, Minoru, to Mitsubishi Electric Corporation. Thread trimming mechanism for sewing machines. 3,728,978, Cl. 112-252.000.
Honda, Oomi: *See—*
Naito, Nobuyoshi; Hiraguri, Tsuyoshi; Yamashita, Katsunori; and Honda, Oomi, 3,729,117.
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, to Xerox Corporation. Liquid developer. 3,729,419, Cl. 252-62.100.
Hope Kabushiki Kaisha: *See—*
Mochizuki, Yoshinari, 3,728,804.
Hopkins, Walker L.; Chvatal, Leland A.; and Edwards, Richard R., to Texaco, Inc. Means and method for controlling the strength of acid in an alkylation unit. 3,729,624, Cl. 235-151.120.
Hori, Jiro; and Nishiyama, Kazuhiro, to Sailor Pen Co., Ltd., The. Mechanical pencil. 3,729,267, Cl. 401-67.000.
Horiba Ltd.: *See—*
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, 3,729,264.
Horiguchi, Toru: *See—*
Okubo, Kei; Horiguchi, Toru; Nakai, Miyoji; and Shimada, Harushisa, 3,729,281.
Hornyak, Joseph V., to PPC Industries, Inc. Apparatus for liquid quenching glass sheets. 3,729,303, Cl. 65-348.000.
Horvath, David J.: *See—*
Berlincourt, Don A.; and Horvath, David J., 3,729,288.
Horvath, Laszlo; Gundisch, Gusztav; Arvai, Mihaly; and Antal, Sandor, to Orszagos Gumiipari Vallalat. Flexible high-strength wire-reinforced rubber hoses. 3,729,028, Cl. 138-130.000.
Hosbach, William A. Tool for lock rings. 3,728,775, Cl. 29-243.570.
Hosier, James C.: *See—*
Eiselstein, Herbert L.; and Hosier, James C., 3,729,308.
Hosokoshi, Kakuichiro, to Matsushita Electronics Corporation. Mercury vapor discharge lamp with radiation plane in envelope. 3,729,643, Cl. 313-184.000.
Houghton, Roger Reid; and Wood, Graham Charles, to Imperial Smelting Corporation (Alloys). Surface treatment of zinc/aluminum alloys. 3,729,391, Cl. 204-32.00r.

Hounsgard, Henning, to Danfoss A/S. Bistable electric switch. 3,729,697, Cl. 335-205.000.

Howard, Norman B., to Procter & Gamble Company, The. Process for forming a stable oil and water-soluble protein-containing emulsion and product thereof. 3,729,325, Cl. 99-123.000.

Howard, Sol; and Schaaf, Robert, to Mil-An Mfg. Corporation. Filter and dust collecting bag for upright vacuum cleaners. 3,728,847, Cl. 55-371.000.

Howmedica, Inc.: *See—*
Averill, Robert G.; and Khowaylo, Alex, 3,728,742.

Howmet Corporation: *See—*
Carnot, John J.; Tingquist, Stanley Carroll; Robb, Ronald Robert; and Feagin, Roy Chester, 3,729,050.

Hoyler, Gerhard: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,728,765.

Hsu, Grace F.; and Beckwith, Merton M., to Conversion Chemical Corporation. Composition and method for electrodeposition of zinc. 3,729,394, Cl. 204-55.00r.

Hubby, Laurence M., Jr.: *See—*
Kusters, John A.; Wilson, David A.; and Hubby, Laurence M., Jr., 3,729,250.

Hubmann, Georg. Jolting tables. 3,729,284, Cl. 425-456.000.

Hudspeth, Steve A.; and Lunsford, John B. Hydraulic drive for a bicycle. 3,729,213, Cl. 280-216.000.

Huebler, Jack; Weil, Sanford A.; and Tarman, Paul B., to Institute of Gas Technology, The. Liquid sealed solids lock hopper. 3,729,105, Cl. 214-17.00b.

Huet, Roger, to Merlin Gerin, Societe Anonyme. Moulded wing flap. 3,729,155, Cl. 244-123.000.

Huey, John Robert; Wurzburg, Otto B.; and Goldsberry, Clyde D., to Moews Seed Company and National Starch and Chemical Corporation. Preventing shedding of pollen by applying binder to corn tassels. 3,728,817, Cl. 47-58.000.

Hughes Aircraft Company: *See—*
Bilow, Norman; and Landis, Abraham L., 3,729,433.

Hugon, Pierre: *See—*
Beregi, Laszlo; Hugon, Pierre; and Laubie, Michel, 3,729,484.

Humphrey Elevator and Truck Company: *See—*
Laing, Marvin R.; and Morris, Adwell B., 3,729,071.

Humphrey, Frederick Harold, to Polypump Curacao N.V. High-pressure pump and check-valve. 3,729,021, Cl. 137-525.000.

Huntingdon Industries Incorporated: *See—*
Ulliman, John E., 3,728,841.

Huntington, Robert C.; and Wood, Lewis, to Motorola, Inc. Strip transmission line broadband 4:1 impedance transformer. 3,729,694, Cl. 333-33.000.

Hurd, William J.: *See—*
United States of America, National Aeronautics and Space Administration, 3,729,736.

Hurschman, Alfred A., to Ampoules, Inc. Variable dosage ampoule applicator. 3,729,003, Cl. 128-218.0da.

Husky Manufacturing & Tool Works Ltd.: *See—*
Rees, Herbert, 3,729,103.

Husman, David N.: *See—*
Moehlenpah, Walter G.; and Husman, David N., 3,728,958.

Hutt, Peter Murray Bruce; and Gormley, Ian Gavin, to Swingball Investments (Proprietary) Limited. Hollow ball including flexible tethering line. 3,729,195, Cl. 273-58.00c.

Hydril Company: *See—*
Lewis, George E.; and Murman, Fernando, 3,729,170.

Hydro-Air Engineering Inc.: *See—*
Moehlenpah, Walter G.; and Husman, David N., 3,728,958.

Ideal Industries, Inc.: *See—*
Metcalf, Irving R., 3,729,217.

Ideal Toy Corporation: *See—*
Ensmann, Burt W.; and Davis, Robert E., 3,728,816.

Idra-Pressen G.m.b.H.: *See—*
Bohnlein, Friedrich; and Stollmann, Georg, 3,729,047.

Iida, Hirofumi; and Watanabe, Kazufumi, to Tokyo Gas Company Limited. Heating furnace provided with high velocity gas burners. 3,729,286, Cl. 431-174.000.

Ikawa, Kenji; and Takami, Fumitaka, to Shionogi & Co., Ltd. Processes for preparing certain pyrimidives. 3,729,472, Cl. 260-250.50r.

Ilford Limited: *See—*
Jefferson, Robin; and Palles, Christopher John, 3,729,319.

Imai, Takeshi; Nomura, Siniti; and Sumita, Muneo, to Nippondenso Kabushiki Kaisha. Method for forming an insulation coating. 3,729,333, Cl. 117-16.000.

Imai, Tomio; Takahashi, Masao; Seki, Nobuyuki; and Irie, Yoshio, to Godo Shusei Kabushi Kaisha. Process for the production of aeruginoic acid. 3,729,378, Cl. 195-28.00r.

Imperial Chemical Industries Limited: *See—*
Austin, Peter William; and Crabtree, Allan, 3,729,476.
Brissenden, Sidney James George, 3,729,030.
Murray, Frank McDonald, 3,729,060.
Nield, Eric, 3,729,527.

Imperial Smelting Corporation (Alloys): *See—*
Houghton, Roger Reid; and Wood, Graham Charles, 3,729,391.

Inada, Masami: *See—*
Okamoto, Tosiaki; Inada, Masami; and Takayama, Katuki, 3,729,236.

Industrial Electronic Engineers, Inc.: *See—*
Rieth, Harold F., 3,728,808.

Industrial Nucleonics Corporation: *See—*
Cho, Boong Y.; Pfeifer, Robert J.; and Utt, Orval L., 3,729,632.

Ingersoll-Rand Company: *See—*
Kipling, Rudyard William, 3,729,734.

Ingham, Michael J., to Richmond Marine Limited. Tiller and rudder assembly. 3,728,983, Cl. 114-162.000.

Ingham, R. E., & Company Limited: *See—*
Ingham, Robert Edward; and Deith, Geoffrey Wilson, 3,729,368.

Ingham, Robert Edward; and Deith, Geoffrey Wilson, to Ingham, R. E., & Company Limited. Wood-plastic sheet laminate and method of making same. 3,729,368, Cl. 161-119.000.

Inoue, Masahiko; and Saito, Takashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle seat provided with a head rest. 3,729,228, Cl. 297-396.000.

Inoue, Masaru, to Hitachi, Ltd. Segmented straight line function generator. 3,729,625, Cl. 235-197.000.

Institute of Gas Technology, The: *See—*
Huebler, Jack; Weil, Sanford A.; and Tarman, Paul B., 3,729,105.

Interlab, Inc.: *See—*
Layton, Howard M., 3,728,866.

International Business Machines Corporation: *See—*
Ahearn, William E.; Almasi, George Stanley; and Genovese, Eugene Ronald, 3,729,724.
Arulpragasam, Jeganandaraj A.; Minshull, John F.; and Murphy, Alan S., 3,729,716.
Cachon, Rene P.; Perlmann, Ariel L.; and Schorr, Michael A., 3,729,206.
Castrucci, Paul P.; Haddad, Nadim F.; and Pecoraro, Raymond P., 3,729,316.
Darling, Richard H.; and Siegl, Ludwig R., 3,729,720.
Dollenmayer, William L., 3,729,201.
Dowd, Albert A., 3,728,963.
Drew, Robert S.; and Jones, John E., 3,729,618.
Eros, Stephen; and Thrasher, Paul M., 3,729,633.
Habegger, Millard A.; and Sincerbox, Glenn T., 3,729,249.
Heard, Roderick S., 3,729,714.
Irwin, John W., 3,729,713.
Judge, Robert L.; and Pearson, Eugene S., 3,728,769.
Konnerth, Karl L.; and Lanza, Conrad, 3,729,731.
Langdon, Jack L., 3,729,662.
Lettieri, John; and Pett, Roger H. E., 3,729,622.
Wiedmann, Siegfried K., 3,729,719.

International Computer Products, Inc.: *See—*
Miller, Robert N., 3,729,146.

International Computers limited: *See—*
Stevenson, Timothy John; and Scarrott, Gordon George, 3,729,663.

International Flavors & Fragrances Inc.: *See—*
Hall, John B., 3,729,514.

International Flavors and Fragrances, Inc.: *See—*
Grossman, James Douglas; and Light, Kenneth K., 3,729,430.

International Nickel Company, Inc., The: *See—*
Eiselstein, Herbert L.; and Hosier, James C., 3,729,308.

International Paper Company: *See—*
Chappelle, James H., 3,729,375.

International Paper Company, mesne: *See—*
Lee, Charles A.; and Sorrells, Frank D., 3,729,005.

International Telephone and Telegraph Corporation: *See—*
McIver, William; and Mattingly, William R., Jr., 3,728,889.

Intini, Vincenzo: *See—*
Sarati, Luigi; and Intini, Vincenzo, 3,729,595.

Inuzuka, Isao: *See—*
Iwasaka, Tatsuo; Matsuzawa, Hideto; Yuminaka, Takeo; Inuzuka, Isao; and Watanabe, Akinori, 3,729,066.

Irie, Yoshio: *See—*
Imai, Tomio; Takahashi, Masao; Seki, Nobuyuki; and Irie, Yoshio, 3,729,378.

Irwin, Carl F.; and Muncaster, William T., to Du Pont de Nemours, E. I., and Company. Organic isocyanate recovery process by distillation with a tar-thinning agent and a stripping agent. 3,729,386, Cl. 203-8.000.

Irwin, John W., to International Business Machines Corporation. Data processing peripheral subsystems. 3,729,713, Cl. 340-172.500.

Ishikawa, Masakazu; and Oka, Hiroyuki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Split hydraulic braking system. 3,729,237, Cl. 303-84.00a.

Isida, Kozo: *See—*
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, 3,729,264.
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, 3,829,264.

Itaya, Muneaki: *See—*
Haruki, Tatsuro; and Itaya, Muneaki, 3,728,845.

Ito, Teiichiro: *See—*
Kikuchi, Takahiko; Nishio, Motohiro; Ito, Teiichiro; and Sekizawa, Yasuharu, 3,729,561.

Itoh, Tsutomu; Suga, Koji; Takumi, Yasuo; and Yamamoto, Masahiro, to Onoda Cement Co., Ltd. Control system of rotary kilns. 3,729,181, Cl. 340-220.000.

Iwasaka, Tatsuo; Matsuzawa, Hideto; Yuminaka, Takeo; Inuzuka, Isao; and Watanabe, Akinori. Elevator control apparatus. 3,729,066, Cl. 187-29.00r.

Izumi, Shinjiro. Apparatus for filling up and sealing a synthetic resin tetrahedron. 3,728,840, Cl. 53-29.000.

Jaatinen, Per Arno: *See—*
Kerttula, Into Isak; and Jaatinen, Per Arno, 3,729,089.

Jackes-Evans Manufacturing Company: *See—*

Harrell, Bob G.; and Harbaugh, Arthur, 3,729,246.

Jakopic, Erich: *See—*
Grasenick, Fritz; and Jakopic, Erich, 3,729,629.

James, David Maldon, to Beanstalk Shelving Limited. Charts. 3,728,802, Cl. 35-73.000.

Jameson, Walter Lee. Attendance indicating board. 3,728,807, Cl. 40-77.600.

Janney Cylinder Company: *See—*
Brown, William D.; Robertshaw, Thomas L.; and Williams, Garner W., 3,729,347.

Janssen, Slyvain, to Compagnie des Compteurs. Device for measuring the density of a fluid. 3,728,893, Cl. 73-32.000.

Jarrett, Jay H., to Ranco Incorporated. Defrost control system. 3,728,867, Cl. 62-140.000.

Jaybee Manufacturing Corporation: *See—*
Lloyd, Gerald A., 3,728,757.

Jefferson Chemical Company, Inc.: *See—*
Tomomatsu, Hideo, 3,729,441.

Jefferson, Robin; and Palles, Christopher John, to Ilford Limited. Optical supersensitisation of silver halide emulsion with three cyanine dyes. 3,729,319, Cl. 96-124.000.

Jeffery, Thomas H.; and Kuster, Karl H., to GTE Automatic Electric Laboratories Incorporated. Power control and supervisory system. 3,729,671, Cl. 321-11.000.

Jehu, Richard Walker, to Dow Chemical Company, The. Method and apparatus for transportation of readily damaged articles. 3,728,975, Cl. 105-369.0ba.

Jenn-Air Corporation: *See—*
Field, Thomas R., 3,728,956.

Jensen, Niels; Thomasson, James T.; and Mead, Donald C., to Recognition Systems, Inc., mesne. Automatic beam ratio control system for holography. 3,729,634, Cl. 250-204.000.

Jespersen, Herbert A., to Outboard Marine Corporation. All-terrain vehicle. 3,728,909, Cl. 74-491.000.

Johansen, Jan, to A/S Grorud Jernvarefabrik. Hinge. 3,728,758, Cl. 16-149.000.

Johns, Herman S., to Wellman Industries, Inc. Apparatus for coiling strand material such as textile silver. 3,728,760, Cl. 19-159.00r.

Johnson & Johnson: *See—*
Kligman, Albert M., 3,729,568.

Johnson, Matthey & Co., Limited: *See—*
Cooper, Brian Sydney; Cronk, John Edward; and Hobbs, Derek John, 3,729,259.

Johnson, Richard I.: *See—*
Hines, Benjamin M.; and Johnson, Richard I., 3,729,200.

Johnson, Robert H.: *See—*
Garrett, Jim C.; Johnson, Robert H.; and Shelton, Jack, 3,729,597.

Johnson, Wallace F.; and Tilson, William H. Universal female receiver for miniature lamp bases. 3,729,700, Cl. 339-59.001.

Joli, Luigi: *See—*
Lampredi, Aurelio; Leoni, Aldo; Ghilardi, Francesco; Degiorgis, Francesco; and Joli, Luigi, 3,728,990.

Jolliffe, J. Paul. Spinning Toy. 3,728,813, Cl. 46-60.000.

Jones, David H., to Electronic Data Preparation Corporation. Stroke counter mechanism. 3,729,620, Cl. 235-92.0pd.

Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, to Sponcel Limited. Method of forming a fabric covered cellulose sponge strand and then compressing it in a plurality of directions. 3,729,537, Cl. 264-47.000.

Jones, John E.: *See—*
Drew, Robert S.; and Jones, John E., 3,729,618.

Jourde, Jean-Pierre Paul: *See—*
Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., 3,728,989.

Jowett, George Edward: *See—*
Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, 3,729,537.

Joyce, Glover C., to Warner & Swasey Company, The. Auxiliary workpiece supporting means for precision grinding machines. 3,728,824, Cl. 51-105.0sp.

J.R.A. Steel Processing Limited: *See—*
Gault, Robert, 3,728,792.

Judge, Robert L.; and Pearson, Eugene S., to International Business Machines Corporation. Apparatus for assembling a module element to a substrate element. 3,728,769, Cl. 29-203.00b.

Jungermann, Eric; and Reich, Henry E., to Armour-Dial, Inc. Bisphenol phosphorus esters. 3,729,532, Cl. 260-936.000.

Justrite Manufacturing Company: *See—*
Flider, Frank S., 3,729,122.

Kabel- und Metallwerke Gutehoffnungshutte: *See—*
Ziemek, Gerhard, 3,728,782.

Kabushiki Kaisha Daini Seikosha: *See—*
Takiguchi, Taisuke, 3,729,104.

Kabushiki Kaisha Keiaisha Seisakusho: *See—*
Fujiwara, Hisao; Sakamoto, Kentaro; and Wada, Goro, 3,729,073.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Mori, Ikuo, 3,728,768.

Kabushiki Kaisha Ricoh: *See—*
Machida, Hazime; Tsurugi, Akira; and Okuno, Zenjiro, 3,729,418.

Kabushiki Kaisha T.I.C.: *See—*
Yokoyama, Etsuzo; and Oono, Yausya, 3,729,601.

Kaesemeyer, Carl W., to Cincinnati Milacron Inc. Multi-plunge turning apparatus. 3,728,917, Cl. 82-25.000.

Kagoshima, Saburo: *See—*
Yoshimura, Shoichiro; Suda, Kazuyoshi; and Kagoshima, Saburo, 3,729,191.

Kaila, Edward: *See—*
Guangorena, Jesus; and Kaila, Edward, 3,728,914.

Kajan Specialty Co., Inc.: *See—*
Roberts, Preston C., 3,729,058.

Kalopissis, Gregoire: *See—*
Charle, Roger; Aviak, Charles; and Kalopissis, Gregoire, 3,729,569.

Kanbar, Maurice S.: *See—*
Wilder, Joseph R.; and Kanbar, Maurice S., 3,729,006.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, 3,729,449.

Kao, Paul W.: *See—*
Lamborn, Homer C.; Gallup, Palmer C.; and Kao, Paul W., 3,728,883.

Karlinsky, Stanislav Evgenievich: *See—*
Gelfenbein, Evgeny Jukhimovich; Karlinsky, Stanislav Evgenievich; Niskovskikh, Vitaly Masimovich; and Khimich, Georgy Lukich, 3,729,048.

Kasik, Robert L., to Beatrice Foods Co. Cheese flavor. 3,729,326, Cl. 99-140.00r.

Kaspar, Elisabeth Barbara: *See—*
Kaspar, Emanual; and Philippson, Rainer, 3,729,495.

Kaspar, Emanual; deceased (by Kaspar, Elisabeth Barbara; main heir); and Philippson, Rainer, to Schering A.G. Process for the preparation of 9 alph-chloro-11 beta-hydroxy steroids. 3,729,495, Cl. 260-397.450.

Kawamata, Taisuke: *See—*
Wada, Ryuji; Nishimura, Hideo; Kodama, Hayashi; and Kawamata, Taisuke, 3,728,826.

Kawawa, Takaho, to Nippon Kokan Kabushiki Kaisha. Method for adding alloying elements to molten metals. 3,729,309, Cl. 75-129.000.

Kayser-Roth Corporation: *See—*
Off, Joseph W. A., 3,728,922.

Kazarinov, Georgy Borisovich: *See—*
Domrachev, Georgy Alexeevich; Melnikov, Valery Vasilievich; Kazarinov, Georgy Borisovich; Skorik, Gleb Alexandrovich; and Fukin, Konstantin Konstantinovich, 3,729,335.

Kedzior, Edward S.; Latham, Thomas J., Jr.; and Boris, John, to Allegheny Ludlum Industries, Inc. Apparatus for reducing the weld build-up on seam welded tubing. 3,729,124, Cl. 228-19.000.

Kehr, Clifton L.; and Wszolek, Walter R., to Grace, W. R. & Co. High energy curable liquid polyene-polythiol polymer composition. 3,729,403, Cl. 204-159.140.

Keil, Eugene O.: *See—*
Naschke, John H.; and Keil, Eugene O., 3,729,387.

Keller, George J., to Fractionation Research, Inc. Apparatus for liquid and vapor or gas mass transfer. 3,729,179, Cl. 261-114.00r.

Kellermann, Konrad-Johann, to Siemens Aktiengesellschaft. Regulating circuit arrangement for controlling the amplification of an amplifier. 3,729,686, Cl. 330-29.000.

Kelling, Leroy U. C., to General Electric Company. Method for the selective multiplication and division of a pulse train and a multiply/divide circuit therefor. 3,729,623, Cl. 235-151.110.

Kelly, Robert F.; and Speetjens, Joseph T., to Torrington Company, The. Straddle latch needle. 3,728,874, Cl. 66-121.000.

Kelly, William J., to Cogar Corporation. DC command smoothing circuit. 3,729,666, Cl. 318-458.000.

Kendall Company, The: *See—*
Hartigan, Edward G.; Patience, Donald; and Knohl, Herbert, 3,728,875.

Kennedy, Kurt D.; and Turner, Maurice E., to Airco Inc. Process for manufacturing foil. 3,729,046, Cl. 164-46.000.

Kerr, William C., to Eastman Kodak Company. Method and apparatus for treating a web. 3,729,648, Cl. 317-2.00r.

Kerttula, Into Isak; and Jaatinen, Per Arno. Device in belt conveyors. 3,729,089, Cl. 198-203.000.

Kessler, Hartmut: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,728,765.

Keyes, Richard Martin; and Herramann, William Christian, to Beatrice Foods Company. In-place cleaning system. 3,729,177, Cl. 259-10.000.

Khainson, Sarrya Isaakovna: *See—*
Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bljum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna, 3,729,540.

Khimich, Georgy Lukich: *See—*
Gelfenbein, Evgeny Jukhimovich; Karlinsky, Stanislav Evgenievich; Niskovskikh, Vitaly Masimovich; and Khimich, Georgy Lukich, 3,729,048.

Khotimsky, Valery Samuilovich: *See—*
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Khotimsky, Valery Samuilovich; Kopkov, Vadim Ivanovich; and Chernyakov, Iosif Efimovich, 3,729,454.

Khowaylo, Alex: *See—*
Averill, Robert G.; and Khowaylo, Alex, 3,728,742.

Ki Kim, Yung: *See—*
Smith, Arthur G.; and Ki Kim, Yung, 3,729,445.

Kibby, Robert M., to Reynolds Metals Company. Gas control method and apparatus. 3,729,399, Cl. 204-67.000.

Kiefer, Augustine J., Jr. Modular structures. 3,728,837, Cl. 52-731.000.
Kiel, Jessie H.: *See—*
Kiel, Robert H.; and Grinonneau, William C., 3,729,339.
Kiel, Robert H.; deceased (by Kiel, Jessie H.; administratrix); and Grinonneau, William C., to Owens-Illinois, Inc. Hydroxy functional acrylic ink. 3,729,339, Cl. 117-124.00e.
Kikuchi, Takahiko; Nishio, Motohiro; Ito, Teiichiro; and Sekizawa, Yasuharu, to Meiji Seika Kaisha, Ltd. Method of anesthetizing aquatic animals using certain thiozole derivatives. 3,729,561, Cl. 424-270.000.
Kimberly-Clark Corporation: *See—*
Stevens, Chester U.; and Selke, William A., 3,729,009.
Stumpf, Robert J.; Mattes, William J.; and Minshell, Herman G., 3,729,353.
Kimbro, Clara D.: *See—*
Kimbro, Exall L., Jr.; and Kimbro, Clara D., 3,728,744.
Kimbro, Exall L., Jr.; and Kimbro, Clara D. Bedpan apparatus. 3,728,744, Cl. 4-113.000.
Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, to Kanegafuchi Boseki Kabushiki Kaisha. Polyamide, fibers composed of the polyamide and methods for producing thereof. 3,729,449, Cl. 260-78.00r.
Kinard, William C. Tape side and track direction indication. 3,729,203, Cl. 274-41.400.
Kincaid, Clifford: *See—*
Kincaid, James R.; and Kincaid, Clifford, 3,729,078.
Kincaid, James R.; and Kincaid, Clifford. Clutch with centrifugally operated cams. 3,729,078, Cl. 192-105.0cp.
Kinzler, Raymond C.; and Staats, Robert M., to Koppers Company, Inc. Flexible belt movable hood. 3,729,384, Cl. 202-263.000.
Kipling, Rudyard William, to Ingersoll-Rand Company. First fault annunciator system. 3,729,734, Cl. 340-415.000.
Kirby, Peter: *See—*
Barker, Michael D.; and Kirby, Peter, 3,729,557.
Kirk, Merritt C., Jr.: *See—*
Camp, Frederick W.; Eisen, Frederic S.; Fear, James Van Dyck; and Kirk, Merritt C., Jr., 3,729,407.
Kissell, Ralph R.: *See—*
Currie, James R.; and Kissell, Ralph R., 3,729,676.
Kitani, Hiroshi: *See—*
Nakahara, Tsuneo; Kitani, Hiroshi; and Yoshida, Kenichi, 3,729,740.
Kitch, Paul E., to Scott Paper Company. Extensible roll tree for festooned sheet material. 3,729,258, Cl. 355-109.000.
Kiyohara, Takehiko, to Canon Kabushiki Kaisha. Device for controlling shutter release operation in photographic cameras. 3,728,952, Cl. 95-53.0eb.
Klein, Bruce W.; and Turak, John L., to Bendix Corporation, The. Disc brake rotor wiper and noise suppressor. 3,729,069, Cl. 188-72.500.
Klein, Richard: *See—*
Benzing, Peter; Klein, Richard; and Trampisch, Alfred, 3,729,093.
Kleinhaut, Samuel, to Bagprint Ltd. Paper box construction. 3,729,127, Cl. 229-52.00a.
Klemke, Rudolf H. E., to Mohawk Industries Inc. Preparation of monomeric 2-cyano-2-butyro-lactones. 3,729,488, Cl. 260-343.600.
Kligman, Albert M., to Johnson & Johnson. Acne treatment. 3,729,568, Cl. 424-318.000.
Klimstra, Paul D.; and Markos, Charles S., to Searle, G. D., & Co. 3,5-Dioxo-a-nor-b-homo steroidal spirolactones. 3,729,491, Cl. 260-343.600.
Knapp, Heinrich: *See—*
Eckert, Konrad; Knapp, Heinrich; Sautter, Wilfried; and Stein, Volkhard, 3,728,993.
Knohl, Herbert: *See—*
Hartigan, Edward G.; Patience, Donald; and Knohl, Herbert, 3,728,875.
Kobayashi, Akiyoshi: *See—*
Tomita, Tamaki; Unno, Kunihiko; and Kobayashi, Akiyoshi, 3,728,823.
Koci, Ludvik F.; and Suarez, Humberto. Pressure relief and drain valve. 3,729,020, Cl. 137-522.000.
Kocks, Friedrich; Quambusch, Albert; and Terdenge, Bernhard. Apparatus for draw forging. 3,728,890, Cl. 72-406.000.
Kodama, Hayashi: *See—*
Wada, Ryuji; Nishimura, Hideo; Kodama, Hayashi; and Kawamata, Taisuke, 3,728,826.
Koehring Company: *See—*
Wilke, Raud A., 3,729,026.
Koeln, Harold E., to Penn Corporation. Pen casing. 3,729,269, Cl. 401-209.000.
Kondo, Hidenobu, to Nippon Kogaku K.K. Device for illuminating indicia in the viewfinder of a camera. 3,728,951, Cl. 95-42.000.
Kondo, Iwao. Electrical discharge machining device using logical control. 3,729,610, Cl. 219-69.00c.
Konen, Thomas P.; and Smith, Robert W., to American Standard Inc. Plumbing manifold. 3,728,746, Cl. 4-192.000.
Konnerth, Karl L.; and Lanza, Conrad, to International Business Machines Corporation. Moving gas panel display system. 3,729,731, Cl. 340-324.00m.
Koo, Bon Gul; and Koo, Bon Hyup. Paper roll holding and dispensing device. 3,729,145, Cl. 242-55.530.
Koo, Bon Hyup: *See—*
Koo, Bon Gul; and Koo, Bon Hyup, 3,729,145.
Koos, Edward E.: *See—*
Beans, Allen F.; Eddowes, Alfred M.; Gagliardi, Richard P.; and Koos, Edward E., 3,729,739.
Kopkov, Vadim Ivanovich: *See—*
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Khotimsky, Valery Samuilovich; Kopkov, Vadim Ivanovich; and Chernyakov, Iosif Efimovich, 3,729,454.
Koppenwallner, Georg, to Fortuna-Werke Maschinenfabrik AG. Safety device for a grinding spindle. 3,728,827, Cl. 51-168.000.
Koppers Company, Inc.: *See—*
Kinzler, Raymond C.; and Staats, Robert M., 3,729,384.
Korea Institute of Science and Technology: *See—*
Chang, Kyung Taik, 3,728,780.
Kostiuk, Peter. Sign holder. 3,728,806, Cl. 40-11.00r.
Kotani, Haruo: *See—*
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, 3,729,264.
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, 3,829,264.
Kowa Company, Ltd.: *See—*
Tani, Hideo; Nagakura, Masahiko; and Mizutani, Takashi, 3,729,468.
Kramer, Fritz. Method of nourishing mammals. 3,729,320, Cl. 99-9.000.
Kramm, David E.: *See—*
Westfall, Wayne L.; Kramm, David E.; and Sanchez, Moises G., 3,729,256.
Kranz, Raymond E.: *See—*
Zenner, Walter J.; and Kranz, Raymond E., 3,729,079.
Kratzer, Reinhold H.; and Paciorek, Kazimiera J. L., to United States of America, Navy. Preparation of pure beryllium hydride. 3,729,552, Cl. 423-645.000.
Kritske, Victor J., to Mayline Company, Inc. Vertical filing apparatus. 3,729,099, Cl. 211-46.000.
Krock, Elmer W.; and Simon, Charles J., to GTE Automatic Electric Laboratories, Incorporated. Line and link sensing technique for PABX telephone system. 3,729,594, Cl. 179-18.0ab.
Kronrumpf, William P.: *See—*
Harnden, John D., Jr.; and Kronrumpf, William P., 3,728,947.
Kronseder, Hermann. Labeling apparatus. 3,728,987, Cl. 118-62.000.
Kruesi, Paul R.: *See—*
Goldsmith, James R.; Kruesi, Paul R.; and Masarky, Henri, 3,729,397.
Kruse, Howard W., to United States of America, Navy. Flare composition comprising dry blend of metal fuel and eutectic mixture of oxidizer salts. 3,729,351, Cl. 149-41.000.
Kubota, Hirokazu, to Matsushita Electric Industrial Co., Ltd. Tire. 3,729,041, Cl. 152-353.000.
Kudlaty, Walter J., to Marvel Engineering Company. Bi-directional check valve. 3,729,019, Cl. 137-493.600.
Kuhl, Henry Y.: *See—*
Wyland, Roy Bruce, 3,728,842.
Kuhl, Paul R., Sr.: *See—*
Wyland, Roy Bruce, 3,728,842.
Kuhn, Richard B.: *See—*
Deye, Neil S.; and Kuhn, Richard B., 3,729,582.
Kupfer Asbest Co.: *See—*
Augustin, Gustav, 3,729,204.
Kuramoto, Yoshio; Tsujimoto, Kayoshi; Yata, Kotaro; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Switching apparatus for exposure control devices. 3,728,946, Cl. 95-10.0ct.
Kurashiki Rayon Co., Ltd.: *See—*
Masada, Yoshiyasu; and Yasui, Tero, 3,729,498.
Kuster, Karl H.: *See—*
Jeffery, Thomas H.; and Kuster, Karl H., 3,729,671.
Kusters, John A.; Wilson, David A.; and Hubby, Laurence M., Jr., to Hewlett-Packard Company. Acousto-optic filter having means for damping acoustic resonances. 3,729,250, Cl. 350-149.000.
Kwok, Michael. Gaskets. 3,729,205, Cl. 277-229.000.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; and Tatsukawa, Keizo, 3,729,366.
Nakayama, Kiyoshi; and Araki, Kazumi, 3,729,381.
La Spirotechnique and Chromex: *See—*
Deloire, Raymond; and Durand, Jacques, 3,729,613.
Labis, George H. Electronic racing game. 3,729,193, Cl. 273-86.00b.
LaChappele, Paul A.; and Mosehauer, Michael, to Eastman Kodak Company. Corona charging apparatus. 3,729,649, Cl. 317-4.000.
Lacour, Bernard: *See—*
Godard, Bruno; and Lacour, Bernard, 3,729,689.
Lagacherie, Guy: *See—*
Bourrel, Jean; Remond, Maurice; Potie, Noel; and Lagacherie, Guy, 3,729,180.
Laing, Marvin R.; and Morris, Adwell B., to Humphrey Elevator and Truck Company. Combined overspeed safety brake and reverse holdback mechanism for elevators. 3,729,071, Cl. 188-189.000.
Lamborn, Homer C.; Gallup, Palmer C.; and Kao, Paul W., to United Concrete Pipe Corporation. Support apparatus for large diameter thin-wall metal cylinders. 3,728,883, Cl. 72-142.000.
Lampredi, Aurelio; Leoni, Aldo; Ghilardi, Francesco; Degiorgis, Francesco; and Joli, Luigi, to FIAT Societa per Azioni. Hydraulic tappets for internal combustion engines. 3,728,990, Cl. 123-90.560.
Landell, Harper: *See—*
Woolworth, Richard G.; Souza, Anthony J.; and Landell, Harper, 3,728,812.
Landis, Abraham L.: *See—*
Bilow, Norman; and Landis, Abraham L., 3,729,433.

Lane, Alexander M.: *See—*
Worden, George M., Sr.; and Lane, Alexander M., 3,728,797.
Langdon, Jack L., to International Business Machines Corporation. Semiconductor resistor. 3,729,662, Cl. 317-235.00r.
Langdon, Michael J., to Xerox Corporation. Electrostatic transfer method. 3,729,311, Cl. 96-1.200.
Lange, Herbert, to Soule Steel Company. Casement window limit stop assembly. 3,728,820, Cl. 49-346.000.
Lange, Karl-Heinz, to Balda-Werke. Shutter and film controls for cameras. 3,728,950, Cl. 95-31.0fm.
Langenstein & Schemann Aktiengesellschaft: *See—*
Bachmann, Horst, 3,728,887.
Lanore, Raymond, to Usines Docoufle. Cutting guide, notably for cigarette making machines. 3,728,923, Cl. 83-318.000.
Lanza, Conrad: *See—*
Konnerth, Karl L.; and Lanza, Conrad, 3,729,731.
Lashley, Raymond. High speed train. 3,728,974, Cl. 105-329.000.
Latham, Thomas J., Jr.: *See—*
Kedzior, Edward S.; Latham, Thomas J., Jr.; and Boris, John, 3,729,124.
Laubie, Michel: *See—*
Beregi, Laszlo; Hugon, Pierre; and Laubie, Michel, 3,729,484.
Lawrence Brothers, Inc.: *See—*
Foltz, Robert E., 3,729,603.
Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., to United States Steel Corporation. Apparatus for surface inspection of moving material with defect type recognition. 3,729,619, Cl. 235-92.0dn.
Layton, Howard M., to Interlab, Inc. Exhaustless clean room work stations. 3,728,866, Cl. 62-126.000.
Le Marchand, Claude, to Societe Anonyme D.B.A. Manual release mechanism for an emergency and parking brake. 3,729,070, Cl. 188-170.000.
Leal-Diaz, Jaime: *See—*
Rangel-Garza, Javier; and Leal-Diaz, Jaime, 3,729,142.
Lechevallier, Andre: *See—*
Casalta, Jean Pierre; Dubs, Claude; and Lechevallier, Andre, 3,729,172.
Lee, Charles A.; and Sorrells, Frank D., to International Paper Company, mesne. Disposable diaper. 3,729,005, Cl. 128-287.000.
Lee, Raymond, Organization, Inc., The: *See—*
Manzanarez, Alfred L., 3,729,035.
Leenders, Luc: *See—*
De Schrijver, Frans Carolus; and Leenders, Luc, 3,729,405.
Lehmann, Claude: *See—*
Dietrich, Henri; and Lehmann, Claude, 3,729,462.
Dietrich, Henri; and Lehmann, Claude, 3,729,463.
Lehmann, Horst; and Curts, Julius, to Beiersdorf Aktiengesellschaft. Process for the preparation of self-adhesive tapes and foils. 3,729,338, Cl. 117-122.00p.
Leissa, Hans-Egon, to Volkswagenwerk Aktiengesellschaft. Hinged rear closure vehicle bodies. 3,729,223, Cl. 296-1.00s.
Leister, Heinrich; and Wolf, Karl-Heinz, to Farbenfabriken Bayer Aktiengesellschaft. Phthalocyanine organic pigments. 3,729,330, Cl. 106-288.00q.
Lemke, Charles H., to Du Pont de Nemours, E. I., and Company. Process for safely reacting active metals. 3,729,548, Cl. 423-371.000.
Lemont, Harold E., to Fairchild Industries, Inc. Reverse velocity rotor and rotorcraft. 3,729,272, Cl. 416-114.000.
Lenz, Gunther: *See—*
Haberland, Ulrich; Lenz, Gunther; Schell, Hermann; and Weirauch, Kurt, 3,729,447.
Leonard, Ronald J., to Baxter Laboratories, Incorporated. Envelope oxygenator for blood having inflatable portions and process of using same. 3,729,377, Cl. 195-1.800.
Leonard, Verna M. Scale intervalometer. 3,728,931, Cl. 84-471.000.
Leonard, Verna M. Quick finder for chords. 3,728,932, Cl. 84-473.000.
Leonhard, Fritz: *See—*
Andra, Wolfhart; Beyer, Erwin; Leonhard, Fritz; Thul, Heribert; and Winter-Gerst, Louis, 3,728,752.
Leoni, Aldo: *See—*
Lampredi, Aurelio; Leoni, Aldo; Ghilardi, Francesco; Degiorgis, Francesco; and Joli, Luigi, 3,728,990.
L'Eplattenier, Francois; and Calderazzo, Fausto, to American Cyanamid Company. Homogeneous ruthenium-catalyzed reduction of nitro compounds. 3,729,512, Cl. 260-580.000.
Lepor, Meyer. Noise protective device. 3,728,741, Cl. 2-209.000.
Lepper, Herbert; Umbach, Wilfried; and Stein, Werner, to Henkel & Cie G.m.b.H. Novel thia-alkanols. 3,729,518, Cl. 260-609.00a.
Lesueur, Claude: *See—*
Bertrand, Bernard; and Lesueur, Claude, 3,728,992.
Lettieri, John; and Pett, Roger H. E., to International Business Machines Corporation. Production statistics counter for key entry device. 3,729,622, Cl. 235-92.0dp.
Levardon, Raymond, to Tractel S.A. Endless jaw chain self-clamping winch. 3,729,173, Cl. 254-175.500.
Lewis, George E.; and Murman, Fernando, to Hydril Company. Rotary plug valve assembly. 3,729,170, Cl. 251-315.000.
Lewis, Richard L.: *See—*
Bach, Lloyd G.; and Lewis, Richard L., 3,729,235.
Liberti, Frank N., to General Electric Company. Thermally stable polycarbonate. 3,729,440, Cl. 260-45.70p.
Lieske, Claire N.: *See—*
Steinberg, George M.; Lieske, Claire N.; Ash, Arthur B.; and Blumbergs, Peter, 3,729,558.
Light, Kenneth K.: *See—*
Grossman, James Douglas; and Light, Kenneth K., 3,729,430.
Lilly, Eli, and Company: *See—*
Doran, Wilbur J., 3,729,305.
Lilly Industries Limited: *See—*
Williamson, William Robert Nigel; Hicks, Terence Alan; and Day, Elaine Hilda, 3,729,475.
Linder, Donald L.: *See—*
Cerny, Frank J., Jr.; and Linder, Donald L., 3,729,688.
Linder, Donald L., to Motorola, Inc. Self-compensated low voltage operational amplifier. 3,729,685, Cl. 330-17.000.
Lindly & Company, Inc.: *See—*
Shottenfeld, Richard; and Abilock, Solomon, 3,729,635.
Lindner, Herbert, GmbH: *See—*
Stade, Gerhard, 3,728,907.
Linn, Stephen; and Bardsley, Robert F., to General Foods Corporation. Apparatus for agglomeration. 3,729,327, Cl. 99-467.000.
Linton, Denton C.: *See—*
Schafer, Jack R.; and Linton, Denton C., 3,729,182.
Lissalde, Henri Robert, to Papeteries Navarde. Production of a fibrous web between an endless belt and an endless permeable belt. 3,729,374, Cl. 162-203.000.
Littell, Norman L. Adjustable lamp assembly. 3,729,627, Cl. 240-4.000.
Little, Carl H., to Weber-Knapp Company. Card tray follower. 3,729,115, Cl. 220-22.300.
Litton Systems, Inc.: *See—*
Harding, Maynard Caldwell; and Payne, Joseph Armando, 3,729,575.
Litz, Arthur. Convertible carrier. 3,729,209, Cl. 280-36.00r.
LKB-Medical AB: *See—*
Tysk, Jan Erik, 3,729,138.
Lloyd, Gerald A., to Jaybee Manufacturing Corporation. Self-latching hinge. 3,728,757, Cl. 16-142.000.
Lloyd William A., to Versatec, Inc. Printing machine and method. 3,729,123, Cl. 226-7.000.
Lobauch, Lawrence E. Center line locator for pipes and the like. 3,728,796, Cl. 33-343.000.
Lochridge, Joe C., to Brown & Root, Inc. Pipeline laying operations with diverse penetration angles. 3,728,865, Cl. 61-72.300.
Lodjic, Carl L., to Global Erectors, Inc. Vertically adjustable loading ramp apparatus. 3,728,754, Cl. 14-71.000.
Logemann, Heino: *See—*
Suling, Carlhans; and Logemann, Heino, 3,729,531.
Long, Tommie J.: *See—*
Tomlinson, George A., Jr.; Long, Tommie J.; and Galloway, Gene C., 3,729,230.
Long, William D.: *See—*
Fell, Ferol S.; Goering, Lowell J.; and Long, William D., 3,728,905.
Long-Lok Fasteners Corporation, mesne: *See—*
Stillman, Donald W.; and Bagheri, Mansour A. H., 3,728,750.
Longsworth, Ralph C., to Air Products and Chemicals, Inc. Cryogenic refrigeration system. 3,728,868, Cl. 62-222.000.
Looser, Ursula, nee Menge; and Fluckiger, Max. Shoulder pad arrangement for a violin or viola. 3,728,928, Cl. 84-280.000.
Lopatka, Dale R., to Reflector Hardware Corporation. Modular cabinet assembly, and components and subassemblies therefor. 3,729,113, Cl. 220-18.000.
Lorentz, Guido Max Rudolf: *See—*
Werner, Gerhard; Stahl, Dieter; and Lorentz, Guido Max Rudolf, 3,729,528.
Louderback, Allan L., to Baxter Laboratories, Inc. Neutral density solutions containing nigrosin dye and carbon black. 3,729,427, Cl. 252-300.000.
Lovatt, Alan Felix, to Code Designs Limited. Reversible sash windows. 3,728,818, Cl. 49-192.000.
Lowdenslager, John R., to Singer Company, The, mesne. Digital nuclear gyroscopic instrumentation and digital phase locked loop therefor. 3,729,674, Cl. 324-.50r.
Lozo, William, to BASF Wyandotte Corporation. Mildewstatic laundry sour. 3,729,422, Cl. 252-106.000.
Lubrizol Corporation, The: *See—*
Hayashi, Katsumi, 3,729,505.
Hoke, Donald Irvin, 3,729,456.
Lucas, Pierre; and Paillet, Pierre, to Crouzet. Method of manufacture of a permanent-magnetized rotor for a synchronous motor. 3,728,786, Cl. 29-598.000.
Lucien, Rene, to Messier. Hydraulic pumps or motors of the rotating barrel type. 3,728,943, Cl. 91-506.000.
Ludwig, George C., to Bendix Corporation, The. Thermal control valve. 3,729,132, Cl. 236-101.000.
Lukes, Stephen M.; and Caton, Robert L., to Carpenter Technology Corporation. Process for making thermally hardened wrought stainless steel shaped member having a duplex ferritic/martensitic microstructure. 3,729,344, Cl. 148-12.400.
Lundahl, Ezra Cordell, to Hesston Corporation. Hay loader. 3,728,849, Cl. 56-1.000.
Lunsford, John B.: *See—*
Hudspeth, Steve A.; and Lunsford, John B., 3,729,213.
Luquain, Jean Claude, to Societe Lucien Ferraz & Cie. Indicator circuits for electric fuse devices. 3,729,656, Cl. 317-40.00a.

Lussling, Theodor; Theissen, Ferdinand; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of malononitrile. 3,729,499, Cl. 260-465.80r.

Lyde, Derek Martin, to Albright & Wilson Limited. Electrodeposition of copper. 3,729,393, Cl. 204-52.00r.

Lysher, Wayne M., to McDonnell Douglas Corporation. Apparatus for producing microspheres. 3,729,278, Cl. 425-10.000.

Maca, Paul D., to Sommer & Maca Glass Machinery Company. Process of producing day/night mirrors. 3,728,830, Cl. 51-283.000.

MacDonald, Robert D., to Cardinal of Adrian, Inc. Molded screen frame. 3,729,045, Cl. 160-371.000.

MacDuff, Stanley I., to Bendix Corporation, The. Adaptive braking system with hydraulically powered modulator. 3,729,169, Cl. 251-129.000.

Machida, Hazime; Tsurugi, Akira; and Okuno, Zenjiro, to Kabushiki Kaisha Ricoh. Liquid developer for electrostatic latent image. 3,729,418, Cl. 252-62.100.

MacKay, John A.; and Doran, John A., III, to Unison Corporation. Centerless grinder. 3,729,300, Cl. 51-103.000.

Macke, Thomas F. Method and apparatus for folding paper. 3,729,186, Cl. 270-68.00a.

MacKenzie, Robert Carl, to Polymer Corporation Limited. Sludge concentration. 3,729,412, Cl. 210-52.000.

MacLean-Fogg Lock Nut Co.: *See*—
Grube, William L., 3,728,933.

Macrander, Max S., to GTE Automatic Electric Laboratories Incorporated. Subscriber interface circuit for unbalanced semiconductor switching system. 3,729,638, Cl. 307-254.000.

Macur, Robert A.: *See*—
Grubb, Willard T.; and Macur, Robert A., 3,729,332.

Magder, Jules, to Princeton Organics, Inc. Cellular foamed material and method for the manufacture thereof. 3,729,328, Cl. 106-87.000.

Magnavox Company, The: *See*—
Slusarski, John F., 3,729,578.

Magnetic Head Corporation: *See*—
Gray, Richard G., 3,729,637.

Magorian, William R., to United States of America, Navy. Coded induction rocket motor ignition system. 3,728,935, Cl. 89-1.811.

Magram, David. Educational apparatus. 3,728,800, Cl. 35-35.00j.

Magyar Asvanyolaj es Foldgaz Kiserleti Intezet: *See*—
Nagy, Zoltan; Sebestyen, Zsigmond; Szepesy, Laszlo; and Feher, Istvan, 3,728,843.

Maidique, Modesto A., to Nova Devices, Inc. IC device arranged to minimize thermal feedback effects. 3,729,660, Cl. 317-235.00r.

Mainprize, David. Spark ignition systems. 3,729,647, Cl. 315-209.0sc.

Makinson, Clifford; and Fullerton, Arthur M., to Scott & Fetzer Company, The. Chain saw with damping means. 3,728,793, Cl. 30-383.000.

Mangold, James, to Societe Anonyme D.B.A. Vehicle antiskid braking system. 3,729,233, Cl. 303-21.00f.

Mankoff, Lawrence L.; and Spinanger, Thomas S., to General Electric Company. Ground conductor continuity checking circuit. 3,729,653, Cl. 317-18.00c.

Mannesmann Aktiengesellschaft: *See*—
Herter, Hermann; and Scherf, Adolf, 3,729,282.

Mannion, Gerald F.; and Mannion, James R. Process fluid flow regulation systems. 3,729,051, Cl. 165-22.000.

Mannion, James R.: *See*—
Mannion, Gerald F.; and Mannion, James R., 3,729,051.

Mannix Co., Ltd.: *See*—
Rymes, John Edis, 3,728,968.

Manzanarez, Alfred L., 30% to Lee, Raymond, Organization, Inc., The. Nail holder. 3,729,035, Cl. 145-46.000.

Marathon Oil Company: *See*—
Beazley, Phillip M.; and Norton, Charles J., 3,729,507.

Marcell, William B. Unwind support for coiled wire. 3,729,092, Cl. 206-52.00w.

Marconi Company Limited, The: *See*—
Cross, Malcolm Geoffrey; and Musson, Joseph Thomas Barrow, 3,729,738.

Maremont Corporation: *See*—
Anderson, Gordon C.; and Harmon, Albert D., 3,728,852.

Mares, Milos: *See*—
Zabrodsky, Zdenek; Crhonek, Oldrich; Sebela, Jiri; and Mares, Milos, 3,729,029.

Mari, Enzo. Container. 3,729,114, Cl. 220-20.000.

Markos, Charles S.: *See*—
Klimstra, Paul D.; and Markos, Charles S., 3,729,491.

Maron, William. Music training device. 3,728,930, Cl. 84-471.000.

Marquardt, Frank R.: *See*—
Hinkle, Charles J.; and Marquardt, Frank R., 3,728,967.

Marrara, Robert S. Piston rod air cleaning device. 3,728,944, Cl. 92-87.000.

Martin-Marietta Corporation: *See*—
Maycock, John Norman; and Witen, Louis, 3,729,352.

Martinet, Christian Jacques Emile Joseph. Device for accelerating the setting of concrete. 3,729,614, Cl. 219-345.000.

Marvel Engineering Company: *See*—
Kudlaty, Walter J., 3,729,019.

Marx, Matthias: *See*—
Bachmann, Gerhard; and Marx, Matthias, 3,729,435.

Masada, Yoshiyasu; and Yasui, Tero, to Kurashiki Rayon Co., Ltd. Process for the preparation of organic dinitriles. 3,729,498, Cl. 260-465.80d.

Masarky, Henri: *See*—
Goldsmith, James R.; Kruesi, Paul R.; and Masarky, Henri, 3,729,397.

Mask, Charles Arnold: *See*—
Cosgrove, Richard Elmond, II; and Mask, Charles Arnold, 3,729,401.

Mason, Mark T.; and Wood, Kenneth G., to Hamilton Kent Manufacturing Company, mesne. Apparatus for automatically directing and maintaining a beam of electromagnetic radiation relative to earth horizontal. 3,729,266, Cl. 356-250.000.

Mason, Ralph Burgess: *See*—
Cull, Neville Leverne; Gladrow, Elroy Merle; Mason, Ralph Burgess; and Hamner, Glen Porter, 3,729,515.

Matchen, Ben; and Robertson, David, to Norton Research Corporation (Canada) Limited. Boron carbide ballistic armor modified with chromium and/or boron. 3,729,372, Cl. 161-193.000.

Mathre, Owen Bertwell; and Swalheim, Donald Arthur, to Du Pont de Nemours, E. I., and Company. Electrotinning process to prevent plating on the cathode contact roll. 3,729,390, Cl. 204-28.000.

Matsui, Masao: *See*—
Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, 3,729,449.

Matsuno, Takashi: *See*—
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kubota, Hirokazu, 3,729,041.
Okubo, Kei; Horiguchi, Toru; Nakai, Miyoji; and Shimada, Haruhisa, 3,729,281.
Yamashita, Tadaoki; and Yamamoti, Osamu, 3,729,630.
Yano, Osahiko, 3,729,583.

Matsushita Electronics Corporation: *See*—
Hosokoshi, Kakuichiro, 3,729,643.

Matsuura, Kenji, to Sumitomo Electric Industries, Ltd. Insulation for power cable joints and a method of making same. 3,729,571, Cl. 174-25.00r.

Matsuzawa, Hideto: *See*—
Iwasaka, Tatsuo; Matsuzawa, Hideto; Yuminaka, Takeo; Inuzuka, Isao; and Watanabe, Akinori, 3,729,066.

Mattel, Inc.: *See*—
Cook, John S.; and Bosley, Denis V., 3,729,134.
Shapero, Wallace H.; and Cane, Albert, 3,728,988.

Mattes, William J.: *See*—
Stumpf, Robert J.; Mattes, William J.; and Minshell, Herman G., 3,729,353.

Mattingly, William R., Jr.: *See*—
McIver, William; and Mattingly, William R., Jr., 3,728,889.

Mattsson, Orjan Mats: *See*—
Widl, Walter Herbert Erwin; and Mattsson, Orjan Mats, 3,729,590.

Matweecha, David M., to Fuller Company. Blending apparatus. 3,729,175, Cl. 259-4.000.

Maugel, Theodore R.: *See*—
Hildebrandt, Guillermo J.; Maugel, Theodore R.; Morgan, Albert R.; and Stern, Boris A., 3,729,373.

Maulding, Donald Roy: *See*—
Zweig, Arnold; and Maulding, Donald Roy, 3,729,426.

Maycock, John Norman; and Witen, Louis, to Martin-Marietta Corporation. Doped ammonium perchlorate oxidizers and method of preparing same. 3,729,352, Cl. 149-74.000.

Mayline Company, Inc.: *See*—
Kritske, Victor J., 3,729,099.

MBAssociates: *See*—
Mulich, Stephen F.; and Sweeney, James A., 3,728,809.

McCarthy, John Felix: *See*—
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,729,565.

McCaughey, Stuart H. High speed transfer drive. 3,728,902, Cl. 74-56.000.

McClain, Paul S.: *See*—
Musgrave, Donald A.; and McClain, Paul S., 3,729,243.

McCurdy, Ronald E. Assembly within a bracket for a projection screen. 3,729,109, Cl. 248-487.000.

McDonald, Keith A.: *See*—
Ellis, Myron P.; Czubak, Albin S.; and McDonald, Keith A., 3,728,829.

McDonald, Ramsey H. Radio pager with voice message and substitute paging numbers. 3,729,680, Cl. 325-55.000.

McDonnell Douglas Corporation: *See*—
Lysher, Wayne M., 3,729,278.

McDonough, Cletus G., to Molex Incorporated. Method of making a shielded cable connector. 3,728,787, Cl. 29-629.000.

McElroy, Arthur H. Portable thermoplastic pipe fusion apparatus. 3,729,360, Cl. 156-499.000.

McEwan, William S.: *See*—
Heller, Carl A.; Richter, Herbert P.; and McEwan, William S., 3,729,425.

McFadden, William H. Golf bag liner. 3,729,036, Cl. 150-1.50r.

McGill, Robert L., Jr.; Worsham, Charles R.; and Green, Norman, to Bendix Corporation, The. Voltage tunable frequency threshold circuit. 3,729,587, Cl. 178-88.000.

McGowan, Eric, to United Gas Industries Limited. Thermostatically controlled gas valve. 3,729,131, Cl. 236-99.000.

McIver, William; and Mattingly, William R., Jr., to International Telephone and Telegraph Corporation. Crimping device. 3,728,889, Cl. 72i402.000.

McLamore, William M.: *See—*
Chang, Yi Han; Evanega, George R.; and McLamore, William M., 3,729,564.

McManus, Ira J. Composite concrete slab and steel joist construction. 3,728,835, Cl. 52-334.000.

Mead, Donald C.: *See—*
Jensen, Niels; Thomasson, James T.; and Mead, Donald C., 3,729,634.

Meiji Seika Kaisha, Ltd.: *See—*
Kikuchi, Takahiko; Nishio, Motohiro; Ito, Teiichiro; and Sekizawa, Yasuharu, 3,729,561.

Melnikov, Valery Vasilievich: *See—*
Domrachev, Georgy Alexeevich; Melnikov, Valery Vasilievich; Kazarinov, Georgy Borisovich; Skorik, Gleb Alexandrovich; and Fukin, Konstantin Konstantinovich, 3,729,335.

Mentrup, Anton; Zeile, Karl; Danneberg, Peter; and Schromm, Kurt, to Boehringer Ingelheim G.m.b.H. N-(Aryl-lower alkyl)-N'-phenyl-piperazines and salts thereof. 3,729,474, Cl. 260-268.0bc.

Merck & Co., Inc.: *See—*
Cragoe, Edward J., Jr., 3,729,500.
Schultz, Everett M., 3,729,509.
Ziegler, Carl; and Sprague, James M., 3,729,508.

Meredith Drilling Co., Inc.: *See—*
Meredith, John A., 3,728,862.

Meredith, John A., to Meredith Drilling Co., Inc. Shoring system and components therefor. 3,728,862, Cl. 61-39.000.

Merger, Franz; Fuchs, Werner; Duembgen, Gerd; and Oberhansberg, Joachim, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of 2,2-dimethyl-1,3-propane. 3,729,506, Cl. 260-484.00r.

Merker, Steve L., to Brown & Williamson Tobacco Corporation. System for detecting loose tobacco at cigarette ends. 3,729,636, Cl. 250-223.00r.

Merlin Gerin, Societe Anonyme: *See—*
Huet, Roger, 3,729,155.
Payen, Jean-Pol, 3,729,599.

Merrick, William. Turntable and ramp for snowmobiles. 3,728,971, Cl. 104-44.000.

Messier: *See—*
Lucien, Rene, 3,728,943.

Metcalf, Irving R., to Ideal Industries, Inc. Connector and method. 3,729,217, Cl. 285-183.000.

Michigan Chemical Corporation: *See—*
Todd, John H., 3,729,434.

Micromatic Hone Corporation: *See—*
Ellis, Myron P.; Czubak, Albin S.; and McDonald, Keith A., 3,728,829.

Middleton, Verne L., to Olin Corporation. Method of inflating metal strip or panels having inflatable fluid passageways. 3,728,778, Cl. 29-421.000.

MIDY: *See—*
Gradnik, Boris, 3,729,555.

Mil-An Mfg. Corporation: *See—*
Howard, Sol; and Schaaf, Robert, 3,728,847.

Milchem Incorporated: *See—*
Bruson, Herman A.; and Gould, Henry, 3,729,432.

Miller, Donald. Emergency inflatable recompression unit. 3,729,002, Cl. 128-204.000.

Miller, Harold N., to Esso Research and Engineering Company. Polymeric wax crystal modifiers for high wax content petroleum oils. 3,729,296, Cl. 44-62.000.

Miller, Norman S. Crotch type elastic band projecting device. 3,728,996, Cl. 124-20.00b.

Miller, Robert N., to International Computer Products, Inc. Magnetic tape transfer system. 3,729,146, Cl. 242-67.400.

Minieri, Pasquale P., to Tenneco Chemicals Inc. 2-(Substituted indazoly-N'-methyl)-2-thiopseudourea salts. 3,729,479, Cl. 260-310.00c.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. N¹-(Substituted acetyl) indazoles and their use in pesticidal compositions. 3,729,480, Cl. 260-310.00c.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. N¹-(Substituted acetoxymethyl)indazoles and their use in pesticidal compositions. 3,729,481, Cl. 260-310.00c.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. Alkyl (substituted indazolyl-N¹-methyl) thiocarbonates and their use as pesticides. 3,729,482, Cl. 260-310.00c.

Minnesota Mining and Manufacturing Company: *See—*
Smith, George H., 3,729,313.

Minolta Camera Kabushiki Kaisha: *See—*
Kuramoto, Yoshio; Tsujimoto, Kayoshi; Yata, Kotaro; and Sahara, Masayoshi, 3,728,946.

Minshell, Herman G.: *See—*
Stumpf, Robert J.; Mattes, William J.; and Minshell, Herman G., 3,729,353.

Minshull, John F.: *See—*
Arulpragasam, Jeganandaraj A.; Minshull, John F.; and Murphy, Alan S., 3,729,716.

Minsker, Lawrence D. Modular furniture. 3,729,229, Cl. 297-442.000.

Mirkovitch, Velimir, to SUTRAMED S.a.r.l. Resorbable surgical suture. 3,729,007, Cl. 128-335.500.

Misek, Bernard: *See—*
Gold, David; Misek, Bernard; and Braun, Norman, 3,729,553.

Mitsubishi Electric Corporation: *See—*
Honda, Hidemi; and Morita, Minoru, 3,728,978.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Hirota, Nobuyoshi, 3,729,423.
Oda, Teishiro; Nakamura, Makoto; and Zama, Masato, 3,729,345.

Mitsui Petrochemical Industries Limited: *See—*
Yoshida, Fujio; Akamatsu, Kagesumi; and Hara, Nobito, 3,729,297.

Mitsui Shipbuilding & Engineering Co., Ltd.: *See—*
Sakata, Masanobu; Nagata, Kenichi; Nagamori, Shigeru; and Suzuki, Hideo, 3,729,232.

Mitsui Shipbuilding and Engineering Co., Ltd.: *See—*
Yoshida, Fujio; Akamatsu, Kagesumi; and Hara, Nobito, 3,729,297.

Miyatuka, Hajime: *See—*
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, 3,729,419.

Mizutani, Takashi: *See—*
Tani, Hideo; Nagakura, Masahiko; and Mizutani, Takashi, 3,729,468.

Mobil Oil Corporation: *See—*
Andress, Harry J., Jr.; and Ashjian, Henry, 3,729,452.
Andress, Harry J., Jr., 3,729,529.
Chen, Nai Yuen, 3,729,409.
Grandio, Philip, Jr.; and Allen, Paul T., 3,729,523.
Harris, Robert E.; and Moseley, William R., 3,729,414.

Mochizuki, Yoshinari, to Hope Kabushiki Kaisha. Ski boot. 3,728,804, Cl. 36-2.5al.

Moehlenpah, Walter G.; and Husman, David N., to Hydro-Air Engineering Inc. Apparatus for fabricating wood structures. 3,728,958, Cl. 100-100.000.

Moews Seed Company: *See—*
Huey, John Robert; Wurzburg, Otto B.; and Goldsberry, Clyde D., 3,728,817.

Mohawk Industries Inc.: *See—*
Klemke, Rudolf H. E., 3,729,488.

Molex Incorporated: *See—*
McDonough, Cletus G., 3,728,787.

Mollura, Carlos A. Apparatus for edge joining panels. 3,729,363, Cl. 156-559.000.

Molybdenum Corporation of America: *See—*
Goldsmith, James R.; Kruesi, Paul R.; and Masarky, Henri, 3,729,397.

Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., to Societe des Procedes Modernes d'Injection Sopromi. Control system for the injection of fuel into internal comustion engines. 3,728,989, Cl. 123-32.0ea.

Monsanto Company: *See—*
Arnett, Gene L.; and Dunlap, William B., 3,729,522.
Baker, Joseph W.; and Schumacher, Ignatius, 3,729,511.
Doleman, Jack; and Hills, William H., 3,729,364.
Gribou, Henry G.; and Schleppnik, Alfred A., 3,729,503.
Schmidt, John G., 3,728,784.
Schmidt, John G., 3,728,785.
Young, Raymond H., Jr., 3,729,312.

Monsees, Claude E., to Wright Machinery Company. Continuous tube sealer. 3,729,359, Cl. 156-466.000.

Montross, Robert C., to Square D Company. Heat sink mounting for the power semiconductor in a solid state D. C. motor control circuit. 3,729,664, Cl. 318-139.000.

Montuschi, Mario; and Palazzetti, Mario, to FIAT Societa per Azioni. Capacitive discharge ignition circuit. 3,728,991, Cl. 123-148.00e.

Moore, Duncan Thomas; and Sands, Peter John, to Western Electric Company, Incorporated. Optical system comprising a single element having a continuously varying index of refraction. 3,729,253, Cl. 350-175.0gn.

Morgan, Albert R.: *See—*
Hildebrandt, Guillermo J.; Maugel, Theodore R.; Morgan, Albert R.; and Stern, Boris A., 3,729,373.

Morgan, Charles L.: *See—*
Carter, Andrew G.; and Morgan, Charles L., 3,729,265.

Morgan, Charles Robert, to Grace, W. R., & Co. Photocurable polyene-polythiol polymers using a phosphine plus an additional sensitizer. 3,729,404, Cl. 204-159.150.

Mori, Ikuo, to Kabushiki Kaisha Komatsu Seisakusho. Method for attaching back-hoe. 3,728,768, Cl. 29-148.300.

Morita, Minoru: *See—*
Honda, Hidemi; and Morita, Minoru, 3,728,978.

Morris, Adwell B.: *See—*
Laing, Marvin R.; and Morris, Adwell B., 3,729,071.

Morris, Hugh C.: *See—*
Yates, Lyle F.; Morris, Hugh C.; and Schmitt, James L., 3,729,171.

Morris, Martin; and Henry, George Ronald, to Dresser Industries, Inc. Nonaqueous lubricant-binder system for refractory ramming mixes. 3,729,329, Cl. 106-58.000.

Morse, John Edwin, to Eastman Kodak Company. Device for processing photographic material. 3,728,953, Cl. 95-93.000.

Mosehauer, Michael: *See—*
LaChappele, Paul A.; and Mosehauer, Michael, 3,729,649.

Mosel-Anstalt: *See—*
Haff, Peter Robert, 3,729,157.

Moseley, William R.: *See—*

Harris, Robert E.; and Moseley, William R., 3,729,414.
Motoren- und Turbinen-Union Muenchen GmbH: *See—*
Seiler, Bernd, 3,728,859.
Motorenfabrik Hatz KG: *See—*
Hatz, Ernst; and Samitz, Erwin, 3,729,274.
Motorola, Inc.: *See—*
Cerny, Frank J., Jr.; and Linder, Donald L., 3,729,688.
Dunn, Thomas A., 3,729,573.
Huntington, Robert C.; and Wood, Lewis, 3,729,694.
Linder, Donald L., 3,729,685.
Osborne, John Francis; and Pille, Hans Joachim, 3,729,406.
Mott, Lambert H. Spinnerette with head filter. 3,729,279, Cl. 425-198.000.
Motzer, Alfred E., to Hobson and Motzer. Apparatus and method for cutting and forming objects. 3,728,888, Cl. 72-325.000.
MPL Inc.: *See—*
Baldwin, Brian E., 3,729,031.
Tischlinger, Edward A.; and Baldwin, Brian E., 3,729,032.
Mueller, Hans W., to SCM Corporation. Ruggedized typebar guide. 3,729,080, Cl. 197-43.000.
Mueller, William J.; and Cuomo, Frank W., to United States of America, Navy. Sum difference transducer shading. 3,729,703, Cl. 340-6.00r.
Mulcahy, Harry William, to AMSTED Industries Incorporated. Adjustable fifth wheel mounting. 3,729,214, Cl. 280-407.000.
Mulich, Stephen F.; and Sweeney, James A., to MBAssociates. Projectile launcher baton. 3,728,809, Cl. 42-13.000.
Muncaster, William T.: *See—*
Irwin, Carl F.; and Muncaster, William T., 3,729,386.
Murata Manufacturing Co., Ltd.: *See—*
Heinouchi, Yosiaki; Tabuchi, Keizo; and Tatsumi, Tetsuo, 3,729,639.
Murman, Fernando: *See—*
Lewis, George E.; and Murman, Fernando, 3,729,170.
Murphy, Alan S.: *See—*
Arulpragasam, Jeganandaraj A.; Minshull, John F.; and Murphy, Alan S., 3,729,716.
Murphy, James Eugene: *See—*
Henrie, Thomas A.; and Murphy, James Eugene, 3,729,306.
Murray, Frank McDonald, to Imperial Chemical Industries Limited. Seismic prospecting. 3,729,060, Cl. 181-.5xc.
Musgrave, Donald A.; and McClain, Paul S., to UNC Industries, Inc. Merchandising cabinet. 3,729,243, Cl. 312-116.000.
Musson, Joseph Thomas Barrow: *See—*
Cross, Malcolm Geoffrey; and Musson, Joseph Thomas Barrow, 3,729,738.
Myers, Robert C. Tilt responsive switch with ball contact actuating structure. 3,729,602, Cl. 200-61.520.
Nabisco, Inc.: *See—*
Reich, Hanan; and Wolf, Seymour, 3,729,176.
Nagakura, Masahiko: *See—*
Tani, Hideo; Nagakura, Masahiko; and Mizutani, Takashi, 3,729,468.
Nagamori, Shigeru: *See—*
Sakata, Masanobu; Nagata, Kenichi; Nagamori, Shigeru; and Suzuki, Hideo, 3,729,232.
Nagaoka, Koichi: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; and Tatsukawa, Keizo, 3,729,366.
Nagasaki, Michisuke, to Yanmar Diesel Engine Co., Ltd. Planetary gear type reversing device. 3,728,913, Cl. 74-785.000.
Nagata, Kenichi: *See—*
Sakata, Masanobu; Nagata, Kenichi; Nagamori, Shigeru; and Suzuki, Hideo, 3,729,232.
Nagy, David. Paint can brush holder. 3,729,158, Cl. 248-110.000.
Nagy, Zoltan; Sebestyen, Zsigmond; Szepesy, Laszlo; and Feher, Istvan, to Magyar Asvanyolaj es Foldgaz Kiserleti Intezet. Process for continuous separation of liquid or gas mixtures on a fixed bed of solids. 3,728,843, Cl. 55-25.000.
Naito, Nobuyoshi; Hiraguri, Tsuyoshi; Yamashita, Katsunori; and Honda, Oomi, to Omron Tateisi Electronics Co. Automatic vending machine control system. 3,729,117, Cl. 221-9.000.
Nakahara, Tsuneo; Kitani, Hiroshi; and Yoshida, Kenichi, to Sumitomo Electric Industries, Ltd. Vehicle antenna for vehicular communication system using leaky coaxial cable. 3,729,740, Cl. 343-713.000.
Nakai, Miyoji: *See—*
Okubo, Kei; Horiguchi, Toru; Nakai, Miyoji; and Shimada, Haruhisa, 3,729,281.
Nakamura, Hiroo: *See—*
Hashimoto, Kametaro; Nakamura, Hiroo; Okada, Toshio; Tanaka, Misugu; and Fukuhara, Kazuto, 3,729,417.
Nakamura, Makoto: *See—*
Oda, Teishiro; Nakamura, Makoto; and Zama, Masato, 3,729,345.
Nakano, Kan, to Tsukasa Felt Shoji Kabushiki Kaisha. Writing nib. 3,729,270, Cl. 401-292.000.
Nakayama, Kiyoshi; and Araki, Kazumi, to Kyowa Hakko Kogyo Co., Ltd. Process for producing l-methionine. 3,729,381, Cl. 195-96.000.
Nametkin, Nikolai Sergeevich; Durgarian, Sergei Garievich; Khotimsky, Valery Samuilovich; Kopkov, Vadim Ivanovich; and Chernyakov, Iosif Efimovich. Method of polymerization of vinyltrioroganosilanes. 3,729,454, Cl. 260-80.0ps.
Narumi, Tadataka, to Toyoda Machine Works, Ltd. Flow divider. 3,729,014, Cl. 137-101.000.
Naschke, John H.; and Keil, Eugene O., to Esso Research and Engineering Company. Distillation of water and alcohol while preventing foaming and formation of emulsions. 3,729,387, Cl. 203-19.000.
Natho, Paul J.; and Vicari, Felix J., to ACF Industries, Incorporated. Piston stop for piston operated valve. 3,729,168, Cl. 251-60.000.
National Starch and Chemical Corporation: *See—*
Huey, John Robert; Wurzburg, Otto B.; and Goldsberry, Clyde D., 3,728,817.
Nef, Heinz: *See—*
Eggenberger, Ulrich; and Nef, Heinz, 3,729,283.
Nelson, Bruce C.: *See—*
Scibor, Alphonse G.; and Nelson, Bruce C., 3,728,938.
Nelson, Bruce C.; and Scibor, Alphonse G. Gas fired caseless ammunition rifle. 3,728,937, Cl. 89-7.000.
Nelson, Clarence N., to Eastman Kodak Company. Optical spatial filtering with multiple light sources. 3,729,252, Cl. 350-162.0sf.
Nes, Per Sigurd. Method for mounting bundles of perforated paper sheets between two perforated file covers, and a device for carrying out the method. 3,728,751, Cl. 11-1.00r.
New Britain Machine Company, The: *See—*
Wolfe, Keinz K.; and Alexander, Alan G., 3,729,064.
Nichols, Kenneth E., to Gates Rubber Company, The. Turbo-compressor-pump. 3,728,857, Cl. 60-36.000.
Nield, Eric, to Imperial Chemical Industries Limited. Thermoplastic polymers blends of polyamides and polyarylsulfones. 3,729,527, Cl. 260-857.00r.
Nielsen, Otto S. Pool table with quick-assembly features. 3,729,192, Cl. 273-7.000.
NIKEX Nehezipari Kulkereskedelmi Vallalat: *See—*
Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, 3,729,413.
Nilsson, Dan Leo, to Saab-Scania Aktiebolag. Arrangement for a motor vehicle fuel system. 3,728,846, Cl. 55-159.000.
Nippon Electric Company, Limited: *See—*
Okazaki, Tairoku, 3,729,644.
Yamamoto, Hirohiko, 3,729,723.
Yano, Kaoru, 3,729,732.
Yoshimura, Shoichiro; Suda, Kazuyoshi; and Kagoshima, Saburo, 3,729,191.
Nippon Grease Co., Ltd.: *See—*
Hashimoto, Kametaro; Nakamura, Hiroo; Okada, Toshio; Tanaka, Misugu; and Fukuhara, Kazuto, 3,729,417.
Nippon Kogaku K.K.: *See—*
Kondo, Hidenobu, 3,728,951.
Nippon Kokan Kabushika Kaisha: *See—*
Hano, Masaaki, 3,729,125.
Nippon Kokan Kabushiki Kaisha: *See—*
Ando, Ryo; Fukushima, Tsutomu; Bando, Masayoshi; and Honda, Akira, 3,729,183.
Kawawa, Takaho, 3,729,309.
Nippondenso Kabushiki Kaisha: *See—*
Imai, Takeshi; Nomura, Siniti; and Sumita, Muneo, 3,729,333.
Takai, Nobuyoshi; and Hattori, Tadashi, 3,728,906.
Nishimura, Hideo: *See—*
Wada, Ryuji; Nishimura, Hideo; Kodama, Hayashi; and Kawamata, Taisuke, 3,728,826.
Nishio, Motohiro: *See—*
Kikuchi, Takahiko; Nishio, Motohiro; Ito, Teiichiro; and Sekizawa, Yasuharu, 3,729,561.
Nishiyama, Kazuhiro: *See—*
Hori, Jiro; and Nishiyama, Kazuhiro, 3,729,267.
Niskovskikh, Vitaly Masimovich: *See—*
Gelfenbein, Evgeny Jukhimovich; Karlinsky, Stanislav Evgenievich; Niskovskikh, Vitaly Masimovich; and Khimich, Georgy Lukich, 3,729,048.
Nitto Boseki Co., Ltd.: *See—*
Sasakura, Tadao; and Sakuma, Katuo, 3,729,371.
Nix, Neil: *See—*
Sette, James J.; and Nix, Neil, 3,729,119.
Sette, James J.; and Nix, Neil, 3,729,120.
Noble, Myron C.: *See—*
Schlueter, David F.; and Noble, Myron C., 3,729,085.
Noble, Myron C., to Wheelabrator-Frye Inc. Apparatus for handling parts. 3,728,822, Cl. 51-15.000.
Nomura, Siniti: *See—*
Imai, Takeshi; Nomura, Siniti; and Sumita, Muneo, 3,729,333.
Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., to United States of America, Agriculture. Process for improving the texture, rigidity, and color of fried potato products. 3,729,323, Cl. 99-100.00p.
Norris, Bob, to United States of America, Navy. Arming and safing device. 3,728,936, Cl. 89-1.812.
Norsk Hydro A.S.: *See—*
Boyum, Oystein; Folkestad, Finn Enok; and Torvund, Asbjorn, 3,729,550.
North American Philips Co., Inc.: *See—*
De Boer, Jacob, 3,729,579.
North American Rockwell Corporation: *See—*
Deye, Neil S.; and Kuhn, Richard B., 3,729,582.
North American Urethanes, Inc.: *See—*
Crowe, Gordon Appling, 3,728,777.
Northern Electric Company, Limited: *See—*
Chow, Quon Sang, 3,729,586.
Northern Petrochemical Company: *See—*

Sanders, Herbert L.; and Braunwarth, John B., 3,729,420.
Norton, Charles J.: *See—*
Beazley, Phillip M.; and Norton, Charles J., 3,729,507.
Norton, Frederick H., to American Optical Corporation. Apparatus for making face plates. 3,729,299, Cl. 65-12.000.
Norton Research Corporation (Canada) Limited: *See—*
Matchen, Ben; and Robertson, David, 3,729,372.
Norton, Richard V., to Sun Oil Company. Process for hydroxyalkyl arylamides and imides. 3,729,510, Cl. 260-326.00a.
Noto, Takao: *See—*
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.
Nova Devices, Inc.: *See—*
Maidique, Modesto A., 3,729,660.
Oberhansberg, Joachim: *See—*
Merger, Franz; Fuchs, Werner; Duembgen, Gerd; and Oberhansberg, Joachim, 3,729,506.
Ocean Research Corporation, mesne: *See—*
Fehmerling, Gottlieb Bernhard, 3,729,324.
Oda, Teishiro; Nakamura, Makoto; and Zama, Masato, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for making propellers of high-strength and high-toughness cast steel. 3,729,345, Cl. 148-3.000.
Off, Joseph W. A., to Kayser-Roth Corporation. Apparatus for feeding and cutting a band of sheet material. 3,728,922, Cl. 83-277.000.
Ogawa, Haruki: *See—*
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.
Ohta, Sadayasu. Dental chair. 3,729,227, Cl. 297-391.000.
Oka, Hiroyuki: *See—*
Ishikawa, Masakazu; and Oka, Hiroyuki, 3,729,237.
Okada, Toshio: *See—*
Hashimoto, Kametaro; Nakamura, Hiroo; Okada, Toshio; Tanaka, Misugu; and Fukuhara, Kazuto, 3,729,417.
Okamoto, Tosiaki; Inada, Masami; and Takayama, Katuki, to Aisin Seiki Company Limited. Anti-skid brake control arrangement for vehicle wheels. 3,729,236, Cl. 303-21.00f.
Okazaki, Hiroshi: *See—*
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.
Okazaki, Tairoku, to Nippon Electric Company, Limited. Helix traveling-wave tube. 3,729,644, Cl. 315-3.500.
O'Keefe, Robert F.: *See—*
Beeken, Basil B.; and O'Keefe, Robert F., 3,729,702.
Okubo, Kei; Horiguchi, Toru; Nakai, Miyoji; and Shimada, Haruhisa, to Matsushita Electric Industrial Co., Ltd. Apparatus for compression-molding a powder within containers. 3,729,281, Cl. 425-361.000.
Okuno, Zenjiro: *See—*
Machida, Hazime; Tsurugi, Akira; and Okuno, Zenjiro, 3,729,418.
Olechowski, Jerome Robert, to Cities Service Company. Bis cyanopyrazolyl alkanes and bis cyanocyclopropyl alkanes. 3,729,464, Cl. 260-310.000.
Olin Corporation: *See—*
Middleton, Verne L., 3,728,778.
Olin Mathieson Chemical Corporation: *See—*
Woodring, William B., 3,728,966.
Oliver, John P., to Cameron Iron Works, Inc. Valve with seat rotating means. 3,729,015, Cl. 137-330.000.
Oliver, Joseph R.: *See—*
Fletcher, Ralph A.; and Oliver, Joseph R., 3,728,997.
Oliver Tire & Rubber Company: *See—*
Shore, Donald G.; and Turjanis, Vitalijs, 3,729,367.
Omron Tateisi Electronics Co.: *See—*
Naito, Nobuyoshi; Hiraguri, Tsuyoshi; Yamashita, Katsunori; and Honda, Oomi, 3,729,117.
Onoda Cement Co., Ltd.: *See—*
Itoh, Tsutomu; Suga, Koji; Takumi, Yasuo; and Yamamoto, Masahiro, 3,729,181.
Oono, Yausya: *See—*
Yokoyama, Etsuzo; and Oono, Yausya, 3,729,601.
Opti-Holding AG: *See—*
Heimberger, Helmut; and Griesbaum, Karl, 3,728,979.
Optical Systems Corporation: *See—*
Court, Patrick R. J., 3,729,576.
Optotechnik G.m.b.H.: *See—*
Heine, Helmut A., 3,728,998.
Orban, Ivan: *See—*
Zweidler, Reinhard; and Orban, Ivan, 3,729,467.
Organisation Europeenne de Recherches Spatiales: *See—*
Engelking, Uwe K., 3,728,900.
Orlandini, Antonio; and Pazzaglia, Massimo, to Societa Italiana Telecomunicazioni Siemens S.p.A. System for selective frequency amplification or attenuation. 3,729,687, Cl. 330-51.000.
Orsymonde: *See—*
Vaille, Madeleine, 3,729,470.
Orszagos Gumiipari Vallalat: *See—*
Horvath, Laszlo; Gundisch, Gusztav; Arvai, Mihaly; and Antal, Sandor, 3,729,028.
Osawa, Sadao: *See—*
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, 3,729,419.
Osborne, John Francis; and Pille, Hans Joachim, to Motorola, Inc. Method of adhering tungsten to glass and for providing a tungsten-gold interconnect layer. 3,729,406, Cl. 204-192.000.
Osoboe opytno-konstruktorskoe bjuro po razvitiju mekhano-pnevmaticheskoi tekhnologii: *See—*
Streltsov, Konstantin Nikolaevich, 3,728,799.
Ostermayer, Franz: *See—*
Denss, Rolf; Clauson-Kaas; and Ostermayer, Franz, 3,729,559.
Otrhalek, Joseph V., to BASF Wyandotte Corporation. Method of removing oil from water. 3,729,411, Cl. 210-36.000.
Otto, Oliver O. Automobile antenna support. 3,729,741, Cl. 343-713.000.
Ousuga, Masakatu: *See—*
Hirasawa, Yaichiro; and Ousuga, Masakatu, 3,728,803.
Outboard Marine Corporation: *See—*
Jespersen, Herbert A., 3,728,909.
Owatonna Tool Company, mesne: *See—*
Roeske, Eugene A., 3,729,185.
Owens-Illinois, Inc.: *See—*
Heaton, Richard A.; and Sachs, Maurice J., 3,729,301.
Heaton, Richard A., 3,729,302.
Kiel, Robert H.; and Grinonneau, William C., 3,729,339.
Oxford Laboratories: *See—*
Roach, William J., 3,729,022.
Ozimek, Chester E.; and Seefeldt, Charles H., to Sears, Roebuck and Co. Typewriter carriage and ribbon field control for error correction. 3,729,081, Cl. 197-82.000.
Paakkinen, Ilmari, to Enso-Gutzeit Osakeyhtio. Coupling device for a dray. 3,729,215, Cl. 280-425.00a.
Paciorek, Kazimiera J. L.: *See—*
Kratzer, Reinhold H.; and Paciorek, Kazimiera J. L., 3,729,552.
Page, John T.: *See—*
Von Linsowe, Carl V., 3,729,016.
Paillet, Pierre: *See—*
Lucas, Pierre; and Paillet, Pierre, 3,728,786.
Palazzetti, Mario: *See—*
Montuschi, Mario; and Palazzetti, Mario, 3,728,991.
Palles, Christopher John: *See—*
Jefferson, Robin; and Palles, Christopher John, 3,729,319.
Palmer, Bryan Harper: *See—*
Harrison, Ian Robert; McCarthy, John Felix; and Palmer, Bryan Harper, 3,729,565.
Palmer, Malcolm George, to Electric Reduction Company of Canada Ltd. Connecting devices. 3,728,934, Cl. 89-1.00b.
Papeteries Navarde: *See—*
Lissalde, Henri Robert, 3,729,374.
Pappo, Raphael: *See—*
Chorvat, Robert J.; Pappo, Raphael; and Scaros, Mike G., 3,729,489.
Paquet, Eugene H.: *See—*
Pfleiderer, George; and Paquet, Eugene H., 3,728,927.
Parker, Fred W., to Du Pont de Nemours, E. I., and Company. Entropically stabilized water base dispersions. 3,729,439, Cl. 260-29.70w.
Parry, Michael B.: *See—*
Gardner, John F.; and Parry, Michael B., 3,728,920.
Patience, Donald: *See—*
Hartigan, Edward G.; Patience, Donald; and Knohl, Herbert, 3,728,875.
Patton, John Tinsman. Preparation of thickening agents entitled, modified heteropolysaccharides. 3,729,460, Cl. 260-209.00r.
Paullus, Clarence Leonard, to AMP Incorporated. Manufacturing method for contact terminal sockets. 3,728,981, Cl. 113-119.000.
Paurat, Friedrich Wilhelm. Mining and excavating apparatus. 3,729,056, Cl. 173-43.000.
Pawlik, Eugene V.: *See—*
United States of America, National Aeronautics and Space Administration, with respect to an invention by, 3,728,861.
Payen, Jean-Pol, to Merlin Gerin, Societe Anonyme. Electrical distribution and current collecting device for high speed vehicles. 3,729,599, Cl. 191-49.000.
Payne, Joseph Armando: *See—*
Harding, Maynard Caldwell; and Payne, Joseph Armando, 3,729,575.
Pazzaglia, Massimo: *See—*
Orlandini, Antonio; and Pazzaglia, Massimo, 3,729,687.
Pearson, Eugene S.: *See—*
Judge, Robert L.; and Pearson, Eugene S., 3,728,769.
Pearson, Robert E. Straight razor adapted for use with injector blades. 3,728,788, Cl. 30-53.000.
Pecoraro, Raymond P.: *See—*
Castrucci, Paul P.; Haddad, Nadim F.; and Pecoraro, Raymond P., 3,729,316.
Pence, Albert L.; and Smith, Van Zandt, to A.P.C. Industries, Inc. Apparatus for ensured splicing of wires. 3,728,770, Cl. 29-203.00d.
Penn Corporation: *See—*
Koeln, Harold E., 3,729,269.
Pennella, Filippo: *See—*
Banks, Robert L.; and Pennella, Filippo, 3,729,525.
Pennwalt Corporation: *See—*
Reed, Karl Gardner, 3,729,128.
Perlmann, Ariel L.: *See—*
Cachon, Rene P.; Perlmann, Ariel L.; and Schorr, Michael A., 3,729,206.

Perry, Kenneth E., to Dynetics Corporation. Machine for finishing surfaces. 3,728,821, Cl. 51-2.00r.

Peterli, Hans Jakob; and Heller, Hansjorg, to Ciba-Geigy Corporation. Sulphur-containing antioxidants. 3,729,443, Cl. 260-45.95c.

Peters, Charles L., to Box Innards, Inc. Paper trimmer. 3,728,925, Cl. 83-441.000.

Peterson, Bertil G., to Tobin-Arp Manufacturing Company. Apparatus for cutting valve seats in engine castings. 3,728,940, Cl. 90-12.500.

Peterson, Ewald O.: *See—*
Dunlap, Robert B.; and Peterson, Ewald O., 3,728,985.

Peterson, Gary E.: *See—*
Frey, Gerald J.; and Peterson, Gary E., 3,729,254.

Petracek, Francis J.; and Sugisaka, Nobuyuki, to Riker Laboratories, Inc. 1-Phenyl-3-phthalancarboxylic acids and intermediates thereof. 3,729,490, Cl. 260-343.20r.

Petrack, Barbara: *See—*
Cash, William D.; Petrack, Barbara; and Weiner, Murray, 3,729,563.

Petro, Jozsef: *See—*
Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, 3,729,413.

Pett, Roger H. E.: *See—*
Lettieri, John; and Pett, Roger H. E., 3,729,622.

Pfeifer, Robert J.: *See—*
Cho, Boong Y.; Pfeifer, Robert J.; and Utt, Orval L., 3,729,632.

Pfeiler, Leslie H.: *See—*
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,729,616.

Pfizer Inc.: *See—*
Chang, Yi Han; Evanega, George R.; and McLamore, William M., 3,729,564.

Pfleiderer, George; and Paquet, Eugene H., to Whitney, W. A., Corporation. Nibbling punch. 3,728,927, Cl. 83-621.000.

Philippson, Rainer: *See—*
Kaspar, Emanual; and Philippson, Rainer, 3,729,495.

Phillips & Roberts Limited: *See—*
Phillips, Maurice Norman; and Roberts, Samuel, 3,729,086.

Phillips, Maurice Norman; and Roberts, Samuel, to Phillips & Roberts Limited. Conveyor. 3,729,086, Cl. 198-34.000.

Phillips Petroleum Company: *See—*
Banks, Robert L.; and Pennella, Filippo, 3,729,525.
Reusser, Robert E., 3,729,524.

Phillips, Wendell O., to General Tire & Rubber Company, The. Processable flame resistant ABS-PVC blends. 3,729,436, Cl. 260-23.70m.

Pickering, Alan Hugh, to English Electric Valve Company Limited. Magnetron tunable by piezo-electric means over a wide range in discrete steps. 3,729,646, Cl. 315-39.550.

Pike, John E.: *See—*
Beal, Philip F., III; and Pike, John E., 3,729,502.

Pille, Hans Joachim: *See—*
Osborne, John Francis; and Pille, Hans Joachim, 3,729,406.

Pioneer Electronic Corporation: *See—*
Tamura, Yutaka, 3,729,061.

Piret, Jean, to Regie Nationale des Usines Renault and Automobiles Peugeot. Control devices of epicyclic gear transmissions. 3,728,910, Cl. 74-695.000.

Piret, Jean, to Automibiles Peugeot and Regie Nationale des Usines. Control mechanism for a transverse power unit having an automatic transmission. 3,729,075, Cl. 192-4.00a.

Pitkow, Jay B.: *See—*
Snead, Edwin E.; and Pitkow, Jay B., 3,729,262.

Plainfield Ordnance Corporation: *See—*
Wilhelm, Gary, 3,728,939.

Plempel, Manfred: *See—*
Boshagen, Horst; and Plempel, Manfred, 3,729,473.

Plesich, Marion F.; and Zavaglia, Edmund A., to Union Carbide Corporation. Latex polymers of vinyl acetate and a silane. 3,729,438, Cl. 260-29.60r.

Plessing, Rudolf, to Cebr. Bohler & Co. Method and apparatus for electroslag re-melting of metals, particularly steel. 3,729,307, Cl. 75-10.000.

Polanka, George J.: *See—*
Gruss, George A.; Pfeiler, Leslie H.; and Polanka, George J., 3,729,616.

Polaroid Corporation: *See—*
Haas, Howard C., 3,729,314.

Pollutant Separation, Inc.: *See—*
Burnett, Henry J., 3,729,042.

Polus, Louise. Baking shield. 3,728,957, Cl. 99-433.000.

Polymer Corporation Limited: *See—*
MacKenzie, Robert Carl, 3,729,412.

Polypump Curacao N.V.: *See—*
Humphrey, Frederick Harold, 3,729,021.

Pomeranz, Yeshajahu; and Wehrli, Hans Peter, to United States of America, Agriculture. Synthesis of glycosyl glycerides. 3,729,461, Cl. 260-210.00r.

Pope, Ralph, to Heinemann Electric Company. Time delay actuator. 3,729,696, Cl. 335-62.000.

Porous Plastics Limited: *See—*
Cunningham, Victor Ralph; Dagenham, Dock; and Boutle, David Leonard, 3,729,538.

Portage, Daniel Lednicer: *See—*
Ericsson, Ronald J.; Portage, Daniel Lednicer; and Youngdale, Gilbert A., 3,729,566.

Porvair Limited: *See—*
Warwicker, Eric Albert, 3,729,536.

Potie, Noel: *See—*
Bourrel, Jean; Remond, Maurice; Potie, Noel; and Lagacherie, Guy, 3,729,180.

Powell, Stancil Driftwood, to Celanese Corporation. Flame retardant polyester-acetate fabric. 3,729,340, Cl. 117-136.000.

Powers, Charles A.: *See—*
Bearden, William G.; and Powers, Charles A., 3,729,337.

PPC Industries, Inc.: *See—*
Hornyak, Joseph V., 3,729,303.

Preiser, Ralph H., to General Time Corporation. Crystal controlled movement with frequency dividing circuitry. 3,728,855, Cl. 58-38.000.

Prellwitz, Samuel B.: *See—*
Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., 3,729,619.

Present, Mortimer T. Method of compacting and coating refuge material. 3,729,107, Cl. 214-152.000.

Princeton Organics, Inc.: *See—*
Magder, Jules, 3,729,328.

Procter & Gamble Company, The: *See—*
Howard, Norman B., 3,729,325.
Smitherman, Herbert C., 3,729,431.

Production Technology Inc., mesne: *See—*
Curtis, Ronald E.; English, Gary L.; and Hense, James R., 3,728,781.

Pronyakin, Nikolai Nikolaevich: *See—*
Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bljum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna, 3,729,540.

Propper Manufacturing Company, Inc.: *See—*
Heine, Helmut A., 3,728,998.

Pszona, Stanislaw. Method and apparatus for the measurement of mixed gamma-neutron radiation dose equivalent. 3,729,631, Cl. 250-83.100.

Pugh, Evelyn M. Thumb or finger guard. 3,728,736, Cl. 2-21.000.

Puritan-Bennett Corporation: *See—*
Bell, Steven A., 3,729,000.

Pye Limited: *See—*
Bushman, John Andrew, 3,729,001.

Quadall Company, Inc.: *See—*
Yeager, Dewey A., 3,729,654.

Quambusch, Albert: *See—*
Kocks, Friedrich; Quambusch, Albert; and Terdenge, Bernhard, 3,728,890.

Quiring, Bernd: *See—*
Himmelmann, Wolfgang; Bergthaller, Peter; Quiring, Bernd; and Wagner, Kuno, 3,729,318.

Radiation Incorporated: *See—*
Beasom, James Douglas, 3,729,661.

Ragep, Gazie K., to Beaunit Corporation. Surface modified polyester reinforcing articles. 3,729,336, Cl. 117-76.00t.

Rainier Companies, Inc., The: *See—*
Vacano, Nickolas Lothar, 3,729,321.

Ramunas, Valdas S., to Warner & Swasey Company, The. Flyer assembly. 3,728,854, Cl. 57-68.000.

Ranco Incorporated: *See—*
Jarrett, Jay H., 3,728,867.

Rangel-Garza, Javier; and Leal-Diaz, Jaime. Drippers for irrigation. 3,729,142, Cl. 239-542.000.

Rast, Gustav Edward, to Allied Chemical Corporation. Coupling tetrazotized aromatic diamines with amino hydroxynaphthalenes employing basic inorganic salts of magnesium or lithium. 3,729,458, Cl. 260-182.000.

Raycon Corporation: *See—*
Check, John M.; and Rupert, Gary F., 3,729,609.

RCA Corporation: *See—*
Sandercock, John Riddle, 3,729,261.

Readal, Gerald J.: *See—*
Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., 3,729,619.

Recognition Systems, Inc., mesne: *See—*
Jensen, Niels; Thomasson, James T.; and Mead, Donald C., 3,729,634.

Rederiaktiebolaget Nordstjernan: *See—*
Svanstrom, Elis Kjell Ake, 3,729,544.

Redington, Rowland W., to General Electric Company. Photoconductive camera tubes and methods of manufacture. 3,729,645, Cl. 315-11.000.

Redmond, Benjamin, to Chenkin, Leila R. Seat belt safety system for motor vehicles. 3,729,059, Cl. 180-82.000.

Reed, Karl Gardner, to Pennwalt Corporation. High pressure centrifuge lubrication system. 3,729,128, Cl. 233-7.000.

Rees, Herbert, to Husky Manufacturing & Tool Works Ltd. Transporter for molded parts and the like. 3,729,103, Cl. 214-1.0bc.

Reflector Hardware Corporation: *See—*
Lopatka, Dale R., 3,729,113.

Regan, James L. Method and apparatus for creating hand-chiseled effect. 3,729,535, Cl. 264-84.000.

Regie Nationale des Usines: *See—*

Piret, Jean, 3,729,075.

Regie Nationale des Usines Renault: *See—*
Bertrand, Bernard; and Lesueur, Claude, 3,728,992.
Piret, Jean, 3,728,910.

Reich, Hanan; and Wolf, Seymour, to Nabisco, Inc. Apparatus for aiding the flow of particulate materials through a hopper. 3,729,176, Cl. 259-4.000.

Reich, Henry E.: *See—*
Jungermann, Eric; and Reich, Henry E., 3,729,532.

Reick, Kenneth R.; Tiger, Emil; and Wolff, David F., to Sunbeam Business Equipment Co. Photodevelopment apparatus including tray assembly and retaining means therefor. 3,729,255, Cl. 355-10.000.

Remond, Maurice: *See—*
Bourrel, Jean; Remond, Maurice; Potie, Noel; and Lagacherie, Guy, 3,729,180.

Reusser, Robert E., to Phillips Petroleum Company. Conversion of olefins. 3,729,524, Cl. 260-683.00d.

Rey, Marcel: *See—*
Caron, Michel; Coquet, Claude; Coste, Philippe; and Rey, Marcel, 3,729,395.

Reynolds Metal Company: *See—*
Donahue, Gary M., 3,729,126.

Reynolds Metals Company: *See—*
Kibby, Robert M., 3,729,399.

Reynolds, Schuyler. Snow ski training device. 3,729,207, Cl. 280-11.200.

Rheem Manufacturing Company: *See—*
Dobbert, Arnold E., 3,728,773.

Ricaud, Pierre, to Societe Nationale Industrielle Aerospatiale and Semca, Societe Anonyme des Ateliers Semca. Method and devices for regulating the pressure and its rate of variation in a chamber. 3,728,955, Cl. 98-1.500.

Rice, Harold B., to Burton, John, Machine Corporation. Case dumper. 3,729,108, Cl. 214-304.000.

Richard, Jean Etienne Marie; and Richard, Louis Antoine Etienne Jean. Warp knitted fabric. 3,728,876, Cl. 66-192.000.

Richard, Louis Antoine Etienne Jean: *See—*
Richard, Jean Etienne Marie; and Richard, Louis Antoine Etienne Jean, 3,728,876.

Richardson-Merrell, Inc.: *See—*
Gold, David; Misek, Bernard; and Braun, Norman, 3,729,553.

Richmond Marine Limited: *See—*
Ingham, Michael J., 3,728,983.

Richter, Herbert P.: *See—*
Heller, Carl A.; Richter, Herbert P.; and McEwan, William S., 3,729,425.

Rieter Machine Works, Ltd.: *See—*
Schiltknecht, Adolf, 3,728,853.

Rieth, Harold F., to Industrial Electronic Engineers, Inc. Bar segment readout light shield. 3,728,808, Cl. 40-130.00e.

Rigot, Robert M.; and Goettling, Douglas B., to Aerpat A.G. Tool for placing threaded inserts. 3,728,882, Cl. 72-114.000.

Riker Laboratories, Inc.: *See—*
Petracek, Francis J.; and Sugisaka, Nobuyuki, 3,729,490.

Rimmer, Rodgers Eugene: *See—*
Briggs, Edward Miles; Edgar, William; and Rimmer, Rodgers Eugene, 3,729,699.

Rite-Hite, mesne: *See—*
Beckwith, Robert C.; and Hecker, Robert W., Jr., 3,728,753.

Rittmeister, Wilhelm: *See—*
Rutzen, Horst; and Rittmeister, Wilhelm, 3,729,520.

RIV-SKF Officine di Villar Perosa S.p.A.: *See—*
Brambilla, Guido; and Fogliacco, Vittorio, 3,729,101.
Camosso, Dominico, 3,729,239.

Roach, William J., to Oxford Laboratories. Disassembleable valve and liquid dispensing device. 3,729,022, Cl. 137-533.150.

Robb, Ronald Robert: *See—*
Carnot, John J.; Tingquist, Stanley Carroll; Robb, Ronald Robert; and Feagin, Roy Chester, 3,729,050.

Roberts Dairy Company: *See—*
Calvert, Philip B., 3,729,322.

Roberts, Derek Aubrey, to United Kingdom of Great Britain & Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Seals. 3,729,139, Cl. 239-127.300.

Roberts, Preston C., to Kajan Specialty Co., Inc. Hydraulic jarring mechanism. 3,729,058, Cl. 175-297.000.

Roberts, Samuel: *See—*
Phillips, Maurice Norman; and Roberts, Samuel, 3,729,086.

Robertshaw, Thomas L.: *See—*
Brown, William D.; Robertshaw, Thomas L.; and Williams, Garner W., 3,729,347.

Robertson, David: *See—*
Matchen, Ben; and Robertson, David, 3,729,372.

Robertson, Douglas G.: *See—*
Tegt, Richard P.; Robertson, Douglas G.; and Blattel, Thomas V., 3,729,598.

Robin, Michael; and Schulte, Sheldon, to Ashland Oil, Inc. Triazine derivatives of bisphenols. 3,729,471, Cl. 260-248.0cs.

Robson, Harry E., to Esso Research and Engineering Company. Layered complex metal silicate compositions and their preparation. 3,729,429, Cl. 252-454.000.

Roehler, Frederick G., II, to United States of America, Navy. Mooring apparatus. 3,728,748, Cl. 9-8.00r.

Roeske, Eugene A., to Owatonna Tool Company, mesne. Hydraulic work support. 3,729,185, Cl. 269-20.000.

Rogozhin, Sergei Vasilievich: *See—*
Davankov, Vadim Alexandrovich; Rogozhin, Sergei Vasilievich; and Tsjurupa, Maria Petrovna, 3,729,457.

Rohr, Edwin, to Vishay Intertechnology, Inc. Firearms, especially sports or target pistol. 3,728,810, Cl. 42-69.00a.

Rohrback, Gilson H.; and Canfield, James H., to General Electric Company. Difluoroamino aliphatic compounds. 3,729,501, Cl. 260-467.000.

Roques, Henri: *See—*
Abadie, Albert; and Roques, Henri, 3,729,410.

Rosen, Melvin Harris; and Blatter, Herbert Morton, to Ciba-Geigy Corporation. 2-Halo-3-aminothietane and- 2H-thiete-1,1-dioxides. 3,729,487, Cl. 260-327.00r.

Rosenthal, Louis A.; and Davis, Donald A., to Union Carbide Corporation. Apparatus for film treating. 3,729,672, Cl. 321-45.00r.

Ross, John Sterry Hawley. Superconducting electrical machines. 3,729,640, Cl. 310-52.000.

Royadjieff, George I.; and Verge, Kenneth W., to Bendix Corporation, The. Actuator assembly. 3,729,276, Cl. 418-59.000.

Roz, Eugene M.: *See—*
Shaffer, George Raymond; and Roz, Eugene M., 3,729,382.

Rubery, Owen & Co. Limited: *See—*
Ward, Peter Thomas, 3,729,222.

Runge, Wallace F., to Commercial Solvents Corporation. Process for producing tributyl phosphate having low sodium ion content. 3,729,533, Cl. 260-990.000.

Rupert, Gary F.: *See—*
Check, John M.; and Rupert, Gary F., 3,729,609.

Russell, Stanley L.: *See—*
Gueldenpfennig, Klaus; and Russell, Stanley L., 3,729,591.

Ruston, Gary Richard. Toy ornithopter wing-driving mechanism. 3,728,814, Cl. 46-74.00r.

Rutzen, Horst; and Rittmeister, Wilhelm, to Henkel & Cie G.m.b.H. Process for the preparation of unsaturated fatty alcohols. 3,729,520, Cl. 260-638.00a.

Rymes, John Edis, to Mannix Co., Ltd. Upper turntable apparatus for positioning railroad ties. 3,728,968, Cl. 104-5.000.

Saab-Scania Aktiebolag: *See—*
Nilsson, Dan Leo, 3,728,846.

Sachs, Maurice J.: *See—*
Heaton, Richard A.; and Sachs, Maurice J., 3,729,301.

Sahara, Masayoshi: *See—*
Kuramoto, Yoshio; Tsujimoto, Kayoshi; Yata, Kotaro; and Sahara, Masayoshi, 3,728,946.

Sailor Pen Co., Ltd., The: *See—*
Hori, Jiro; and Nishiyama, Kazuhiro, 3,729,267.

Saito, Takashi: *See—*
Inoue, Masahiko; and Saito, Takashi, 3,729,228.

Sakamoto, Kentaro: *See—*
Fujiwara, Hisao; Sakamoto, Kentaro; and Wada, Goro, 3,729,073.

Sakata, Masanobu; Nagata, Kenichi; Nagamori, Shigeru; and Suzuki, Hideo, to Mitsui Shipbuilding & Engineering Co., Ltd. Apparatus for converting solidified powders of ores loaded in ore transport ships into slurries. 3,729,232, Cl. 302-15.000.

Sakuma, Katuo: *See—*
Sasakura, Tadao; and Sakuma, Katuo, 3,729,371.

Sallot, Georges R.: *See—*
Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., 3,728,989.

Salvato, Frank J. Transom transducer mounting bracket. 3,729,162, Cl. 248-291.000.

Samitz, Erwin: *See—*
Hatz, Ernst; and Samitz, Erwin, 3,729,274.

Sanchez, Moises G.: *See—*
Westfall, Wayne L.; Kramm, David E.; and Sanchez, Moises G., 3,729,256.

Sandercock, John Riddle, to RCA Corporation. Stabilized multipass interferometer. 3,729,261, Cl. 356-112.000.

Sanders Associates Inc.: *See—*
Shunda, Donald G., 3,729,684.

Sanders, Herbert L.; and Braunwarth, John B., to Northern Petrochemical Company. Antifreeze compositions. 3,729,420, Cl. 252-77.000.

Sanders, Neill Joseph. Mouthpieces for musical instruments. 3,728,929, Cl. 84-398.000.

Sands, Peter John: *See—*
Moore, Duncan Thomas; and Sands, Peter John, 3,729,253.

Santoli, Pasquale A., to Allegheny Ludlum Industries, Inc. High pressure tooling assembly. 3,728,884, Cl. 72-273.000.

Sarati, Luigi; and Intini, Vincenzo, to Societa Italiana Telecomunicazioni Siemens S.p.A. Radiotelephone system with central office having individual processors assignable to respective mobile units aboard communicating vehicles. 3,729,595, Cl. 179-41.00a.

Sasakura, Tadao; and Sakuma, Katuo, to Nitto Boseki Co., Ltd. Process for producing highly crimped viscose rayon. 3,729,371, Cl. 161-173.000.

Sato, Hiroshi; and Toshima, Hisashi, to Hitachi, Ltd. Cooling liquid admitting and exhausting device for use with liquid-cooled electrical rotary machines. 3,729,641, Cl. 310-54.000.

Saul, Robert H., to Bell Telephone Laboratories, Incorporated. Method for the solution growth of more perfect semiconductor crystals. 3,729,348, Cl. 148-172.000.

Sautter, Wilfried: *See—*

Eckert, Konrad; Knapp, Heinrich; Sautter, Wilfried; and Stein, Volkhard, 3,728,993.

Savage, Phillip D., to Hall Ski-Lift Company, Inc. Windshield for ski-lift chair. 3,729,225, Cl. 297-184.000.

Sawyer, Arthur W.; and Csejka, David A. Borate esters prepared by successive reactions of boric acid with glycol monoethers and polyols. 3,729,497, Cl. 260-462.00r.

Scaros, Mike G.: *See—*
Chorvat, Robert J.; Pappo, Raphael; and Scaros, Mike G., 3,729,489.

Scarrott, Gordon George: *See—*
Stevenson, Timothy John; and Scarrott, Gordon George, 3,729,663.

Schaaf, Robert: *See—*
Howard, Sol; and Schaaf, Robert, 3,728,847.

Schafer, Jack R.; and Linton, Denton C., to Desert West, Inc. Process and apparatus for recovering precious metals. 3,729,182, Cl. 266-9.000.

Schaller, David R., to General Electric Company. Method and apparatus for dispensing pellets into lamps. 3,729,247, Cl. 316-16.000.

Schell, Hermann: *See—*
Haberland, Ulrich; Lenz, Gunther; Schell, Hermann; and Weirauch, Kurt, 3,729,447.

Scheppmann, A. F., & Son Mfg. Co.: *See—*
Bayerkohler, Weldon S., 3,729,033.

Scherenberg, Hans O., to Daimler-Benz Aktiengesellschaft. Air-cooled internal combustion engine with super-charging, especially multi-fuel internal combustion engine. 3,728,856, Cl. 60-13.000.

Scherf, Adolf: *See—*
Herter, Hermann; and Scherf, Adolf, 3,729,282.

Schering A.G.: *See—*
Kaspar, Emanual; and Philippson, Rainer, 3,729,495.

Schering Aktiengesellschaft: *See—*
Hofmeister, Helmut; Steinbeck, Hermann; and Wiechert, Rudolf, 3,729,494.

Schiltknecht, Adolf, to Rieter Machine Works, Ltd. Method and apparatus for interrupting the supply of fiber material to a spinning machine. 3,728,853, Cl. 57-58.950.

Schippers, James Henry; and Chisholm, James Edwards, to Formica Corporation. Modular extrusion for cabinets and similar structures. 3,729,241, Cl. 312-107.000.

Schlenker, Herbert, to Schlenker, Herbert, Firma. Action unit for measuring devices. 3,728,898, Cl. 73-386.000.

Schlenker, Herbert, Firma: *See—*
Schlenker, Herbert, 3,728,898.

Schleppnik, Alfred A.: *See—*
Gribou, Henry G.; and Schleppnik, Alfred A., 3,729,503.

Schlueter, David F.; and Noble, Myron C., to FMC Corporation. Casing machine. 3,729,085, Cl. 198-25.000.

Schlumberger Technology Corporation: *See—*
Grijalva, Victor E., 3,729,705.

Schmale, Johannes, to Brown, Boveri & Cie A.G. Switch mechanism including quick detachable electrical connector means. 3,729,612, Cl. 200-166.0ct.

Schmidt, Harry. Coolant system for heat removal apparatus. 3,728,869, Cl. 62-266.000.

Schmidt, John G., to Monsanto Company. Fabrication of semiconductor devices. 3,728,784, Cl. 29-578.000.

Schmidt, John G., to Monsanto Company. Fabrication of semiconductor devices. 3,728,785, Cl. 29-588.000.

Schmidt-Hatting, Wolfgang, to Swiss Aluminium Ltd. Process and cell for the electrolytic recovery of aluminum. 3,729,398, Cl. 204-67.000.

Schmitt, James L.: *See—*
Yates, Lyle F.; Morris, Hugh C.; and Schmitt, James L., 3,729,171.

Schneider, Hans-Dieter, to Fernseh G.m.b.H. Television camera system. 3,729,580, Cl. 178-5.40r.

Schneider, Hans-Dieter, to Fernseh G.m.b.H. Constant voltage in varied length cables. 3,729,673, Cl. 323-43.50s.

Schneider, Jurg V.: *See—*
Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., 3,728,989.

Schneirow, Harry A.: *See—*
Hahto, Charles; and Schneirow, Harry A., 3,729,216.

Schofield, John Allan; and Delano, Roger Albert, to Union Carbide Corporation. Tertiary azeotropic cleaning solution based on tetrachlorodifluoroethane. 3,729,424, Cl. 252-171.000.

Schorr, Michael A.: *See—*
Cachon, Rene P.; Perlmann, Ariel L.; and Schorr, Michael A., 3,729,206.

Schrade, Jean, to Swiss Aluminium Ltd. Method for the production of composite plates. 3,729,355, Cl. 156-283.000.

Schramm, George R., to Avco Corporation. Accessory arrangement for a reciprocating internal combustion engine. 3,728,995, Cl. 123-195.00a.

Schroeder, Hubert J.: *See—*
French, John B.; and Schroeder, Hubert J., 3,729,362.

Schromm, Kurt: *See—*
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; and Schromm, Kurt, 3,729,474.

Schulte, Sheldon: *See—*
Robin, Michael; and Schulte, Sheldon, 3,729,471.

Schultz, Everett M., to Merck & Co., Inc. (Mono- and diacylvinyl)aryl alkanoic (and alkenoic)-acids. 3,729,509, Cl. 260-515.00r.

Schulz, Norbert: *See—*
Gotta, Hans; and Schulz, Norbert, 3,729,346.

Schumacher, Ignatius: *See—*
Baker, Joseph W.; and Schumacher, Ignatius, 3,729,511.

Schwartz, Frederic W., to Cable Electric Products, Inc. Lamp conversion unit. 3,729,628, Cl. 240-52.600.

Schwarz, Otto; and Eibl, Hans. Prophytactic preparation for preventing sensitization of RH-negative mothers by RH-positive fetal erythrocytes. 3,729,556, Cl. 424-177.000.

Schwedersky, George H. Burner and method of operating it to control the production of nitrogen oxides. 3,729,285, Cl. 431-8.000.

Schweizerische Lokomotiv- und Maschinenfabrik: *See—*
Hinnen, Hermann, 3,728,973.

Scibor, Alphonse G.: *See—*
Nelson, Bruce C.; and Scibor, Alphonse G., 3,728,937.

Scibor, Alphonse G.; and Nelson, Bruce C. Breech seal for caseless ammunition firearm. 3,728,938, Cl. 89-26.000.

SCM Corporation: *See—*
Mueller, Hans W., 3,729,080.

Scott & Fetzer Company, The: *See—*
Makinson, Clifford; and Fullerton, Arthur M., 3,728,793.

Scott Paper Company: *See—*
Kitch, Paul E., 3,729,258.

Scott, William B., to Whitney, W. A., Corporation. Broken tool detector. 3,728,919, Cl. 83-62.000.

Searle, G. D., & Co.: *See—*
Chorvat, Robert J.; Pappo, Raphael; and Scaros, Mike G., 3,729,489.
Klimstra, Paul D.; and Markos, Charles S., 3,729,491.

Sears, Roebuck and Co.: *See—*
Ozimek, Chester E.; and Seefeldt, Charles H., 3,729,081.

Sebela, Jiri: *See—*
Zabrodsky, Zdenek; Crhonek, Oldrich; Sebela, Jiri; and Mares, Milos, 3,729,029.

Sebestyen, Zsigmond: *See—*
Nagy, Zoltan; Sebestyen, Zsigmond; Szepesy, Laszlo; and Feher, Istvan, 3,728,843.

Seeburg Corporation, The: *See—*
Clouser, Leon C., Jr., 3,729,240.

Seefeldt, Charles H.: *See—*
Ozimek, Chester E.; and Seefeldt, Charles H., 3,729,081.

Seiler, Bernd, to Motoren- und Turbinen-Union Muenchen GmbH. Fuel nozzle for gas turbine engines. 3,728,859, Cl. 60-39.490.

Seiter, Hartmut: *See—*
Dietz, Wolfgang; and Seiter, Hartmut, 3,729,341.

Seki, Nobuyuki: *See—*
Imai, Tomio; Takahashi, Masao; Seki, Nobuyuki; and Irie, Yoshio, 3,729,378.

Sekizawa, Yasuharu: *See—*
Kikuchi, Takahiko; Nishio, Motohiro; Ito, Teiichiro; and Sekizawa, Yasuharu, 3,729,561.

Selden, Ronald B.: *See—*
Denney, Joseph M.; and Selden, Ronald B., 3,729,725.

Select Systems, Inc.: *See—*
Farrell, John C.; and Balfanz, Thomas L., 3,729,034.

Selke, William A.: *See—*
Stevens, Chester U.; and Selke, William A., 3,729,009.

Seltzer, Daniel Arron: *See—*
Young, Robert Leonard; and Seltzer, Daniel Arron, 3,729,727.

Seltzer, Raymond; and Gordon, David A. Polyimides from 2,6-diamino-s-triazines and dianhydrides. 3,729,448, Cl. 260-65.000.

Semca, Societe Anonyme des Ateliers Semca: *See—*
Ricaud, Pierre, 3,728,955.

Semp, Bernard Albert, to American Cyanamid Company. Sterile surgical gloves. 3,728,739, Cl. 2-168.000.

Serur, Juan Ricardo. Treating blood. 3,729,098, Cl. 210-321.000.

Sette, James J.; and Nix, Neil, said Nix assor. to Sterling Drug Inc. Childproof overcap with horizontal spray. 3,729,119, Cl. 222-153.000.

Sette, James J.; and Nix, Neil, said Nix assor. to Sterling Drug Inc. Childproof relockable actuator overcap. 3,729,120, Cl. 222-153.000.

Sevilla, Ernesto G.; and Titus, Robert J., to Cogar Corporation. Display system. 3,729,730, Cl. 340-324.0ad.

Shaffer, Donald H., 15% to Darby, William J. and 15% to Abbot, John L. Oil field board game apparatus. 3,729,198, Cl. 273-134.0ac.

Shaffer, George Raymond; and Roz, Eugene M., to Becton Dickinson and Company. Microorganism sampling dish. 3,729,382, Cl. 195-139.000.

Shapero, Wallace H.; and Cane, Albert, to Mattel, Inc. Marine life storage habitat medium and shipping method. 3,728,988, Cl. 119-2.000.

Sharp, Donald Jex: *See—*
De Angelo, Michael Anthony; and Sharp, Donald Jex, 3,729,388.
De Angelo, Michael Anthony; and Sharp, Donald Jex, 3,729,389.

Shaw, Garrett D., to TRW Inc. Triaxial compression test apparatus. 3,728,895, Cl. 73-94.000.

Sheldon, Loren B.; Cain, Lester Lee; and Dower, Ethell J., to Drill-Au-Mation, Inc. Dynamic torque measuring system. 3,728,896, Cl. 73-136.00c.

Shell Oil Company: *See—*
Barker, Michael D.; and Kirby, Peter, 3,729,557.

Shelton, Jack: *See—*

Garrett, Jim C.; Johnson, Robert H.; and Shelton, Jack, 3,729,597.
Sherrington, John E., to Gottscho, Adolph, Inc. Marking apparatus for multi-lane web material. 3,728,962, Cl. 101-288.000.
Sherwin, Russell, to Western Microwave Laboratories, Inc. Frequency selective remote control system. 3,729,710, Cl. 340-171.00r.
Shields-Jetco, Inc.: *See—*
Evans, Clifford J., 3,729,231.
Shimada, Haruhisa: *See—*
Okubo, Kei; Horiguchi, Toru; Nakai, Miyoji; and Shimada, Haruhisa, 3,729,281.
Shimadzu Seisakusho Ltd.: *See—*
Haruki, Tatsuro; and Itaya, Muneaki, 3,728,845.
Shimanski, William H.: *See—*
Conklin, Robert M.; Anderson, Robert I.; Gautraud, Michael G.; and Shimanski, William H., 3,729,315.
Shimrony, Yoram, to Bendix Corporation, The. In-tank fuel pump reservoir. 3,729,273, Cl. 417-79.000.
Shionogi & Co., Ltd.: *See—*
Ikawa, Kenji; and Takami, Fumitaka, 3,729,472.
Shirai, Masayuki, to Yamauchi Rubber Industry Co., Ltd. Apparatus for adjusting the altitude of a chord of an expanding roll. 3,728,767, Cl. 29-116.0ad.
Shore, Donald G.; and Turjanis, Vitalijs, to Oliver Tire & Rubber Company. Rubber product for tire recapping apparatus and method for making. 3,729,367, Cl. 161-102.000.
Shottenfeld, Richard; and Abilock, Solomon, to Lindly & Company, Inc. Yarn Inspector. 3,729,635, Cl. 250-219.00s.
Shuba, Joseph Patrick, to GTE Automatic Electric Laboratories Incorporated. Dynamic mode integrated circuit memory with self-initiating refresh means. 3,729,722, Cl. 340-173.00r.
Shumaker, Charles Storer, to United Engineering and Foundry Company of Pittsburgh. Spool and coil handling device for a rolling mill. 3,729,102, Cl. 214-1.0bb.
Shunda, Donald G., to Sanders Associates Inc. Data demodulator employing multiple correlations and filters. 3,729,684, Cl. 329-104.000.
Siddall, John B.; and Henrick, Clive A., to Zoecon Corporation. Epithio di-unsaturated aliphatic ketones and aldehydes. 3,729,486, Cl. 260-327.00e.
Siegl, Ludwig R.: *See—*
Darling, Richard H.; and Siegl, Ludwig R., 3,729,720.
Siemens Aktiengesellschaft: *See—*
Behn, Reinhard; Gottlob, Heinrich; Haid, Hans; Hoyler, Gerhard; and Kessler, Hartmut, 3,728,765.
Glock, Hans; and Ernst, Herbert, 3,729,721.
Gratzke, Werner, 3,729,655.
Kellermann, Konrad-Johann, 3,729,686.
Winkler, Klaus, 3,729,148.
Sijkema, Leendert Frederik Willem, to Heineken Brouwerijen N.V. Pressure gauge. 3,728,899, Cl. 73-393.000.
Silberring, Ludwig, to Sulzer Brothers, Ltd. Process and plant for ammonia synthesis. 3,729,547, Cl. 423-359.000.
Silvestrini, Richard L., to Bendix Corporation, The. Solenoid valve with stroke insensitive port. 3,729,025, Cl. 137-625.330.
Silvia, Denis, to United States of America, Navy. Explosive circuits. 3,728,965, Cl. 102-22.000.
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, to Horiba Ltd. Analyzer using the rotor of a motor as a light chopper. 3,729,264, Cl. 356-206.000.
Simazaki, Tosio; Kotani, Haruo; and Isida, Kozo, to Hiriba Ltd. Analyzer using the rotor of a motor as a light chopper. 3,829,264, Cl. 356-206.000.
Simo, Zsuzsa, nee Barczy: *See—*
Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, 3,729,413.
Simon, Charles J.: *See—*
Krock, Elmer W.; and Simon, Charles J., 3,729,594.
Sincerbox, Glenn T.: *See—*
Habegger, Millard A.; and Sincerbox, Glenn T., 3,729,249.
Sinfelt, John H.: *See—*
Carter, James L.; and Sinfelt, John H., 3,729,408.
Singer Company, The: *See—*
Waibel, Helmut K., 3,729,187.
Singer Company, The, mesne: *See—*
Lowdenslager, John R., 3,729,674.
Skiöstrom, Walter W. Concealed actuating unit for automatically raising and lowering cabinets and the like. 3,729,245, Cl. 312-223.000.
Skorik, Gleb Alexandrovich: *See—*
Domrachev, Georgy Alexeevich; Melnikov, Valery Vasilievich; Kazarinov, Georgy Borisovich; Skorik, Gleb Alexandrovich; and Fukin, Konstantin Konstantinovich, 3,729,335.
Slumberland Group Limited: *See—*
Docker, Leslie Thomas, 3,728,747.
Slusarski, John F., to Magnavox Company, The. Method and apparatus for modifying electrical signals. 3,729,578, Cl. 178-5.4he.
Smith, Arthur G.; and Ki Kim, Yung, to Dow Corning Corporation. Fluorosilicone polymers. 3,729,445, Cl. 260-46.50r.
Smith, George H., to Minnesota Mining and Manufacturing Company. Novel photosensitive systems comprising diaryliodonium compounds and their use. 3,729,313, Cl. 96-27.00r.
Smith, Philip Sydney, to AMP Incorporated, mesne. Longitudinal top spring receptacle. 3,729,701, Cl. 339-223.00r.
Smith, Robert W.: *See—*
Konen, Thomas P.; and Smith, Robert W., 3,728,746.
Smith, Van Zandt: *See—*
Pence, Albert L.; and Smith, Van Zandt, 3,728,770.
Smithe, F. L., Machine Company, Inc.: *See—*
Helm, Herbert W., 3,728,918.
Smitherman, Herbert C., to Procter & Gamble Company, The. Detergent composition. 3,729,431, Cl. 252-535.000.
Snead, Edwin E.; and Pitkow, Jay B., to Burroughs Corporation. Optical lens docking system. 3,729,262, Cl. 356-153.000.
Snelling, Christopher, to Xerox Corporation. Imaging process. 3,729,334, Cl. 117-37.01e.
Snitzer, Elias, to American Optical Corporation, mesne. Means for producing and amplifying optical energy. 3,729,690, Cl. 331-94.500.
Snyder, Charles F.; and Casad, Burton M., to Continental Oil Company. Vapor adsorption process. 3,728,844, Cl. 55-33.000.
Societa Chimica Larderello S.p.A.: *See—*
Castin, Marcel; and Demilie, Paul, 3,729,545.
Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Orlandini, Antonio; and Pazzaglia, Massimo, 3,729,687.
Sarati, Luigi; and Intini, Vincenzo, 3,729,595.
Societe Anonyme D.B.A.: *See—*
Le Marchand, Claude, 3,729,070.
Mangold, James, 3,729,233.
Societe Anonyme des Usines Chausson: *See—*
Chartet, Andre, 3,728,783.
Societe Anonyme dite: L'Oreal: *See—*
Charle, Roger; Aviak, Charles; and Kalopissis, Gregoire, 3,729,569.
Societe Anonyme dite: SKF Compagnie d'Applications Mecaniques: *See—*
De Lavalette, Pierre de Lacroix, 3,729,076.
Societe des Procedes Modernes d'Injection Sopromi: *See—*
Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., 3,728,989.
Societe des Usines Chimiques de Pierrelatte: *See—*
Caron, Michel; Coquet, Claude; Coste, Philippe; and Rey, Marcel, 3,729,395.
Societe d'Optique, Precision Electronique et Mecanique-Sopelem: *See—*
Taisne, Jean, 3,729,621.
Societe en Nom Collectif "Science Union et Cie, and Societe Francaise de Recherche Medicale": *See—*
Beregi, Laszlo; Hugon, Pierre; and Laubie, Michel, 3,729,484.
Societe Industrielle Generale de Macanique Appliquee S.I.G.M.A.: *See—*
Vuaille, Andre, 3,728,870.
Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
Brette, Yves-Jean Francois, 3,729,668.
Societe Lucien Ferraz & Cie: *See—*
Luquain, Jean Claude, 3,729,656.
Societe Nationale des Gas du Sud-Quest: *See—*
Bourrel, Jean; Remond, Maurice; Potie, Noel; and Lagacherie, Guy, 3,729,180.
Societe Nationale Industrielle Aerospatiale: *See—*
Ricaud, Pierre, 3,728,955.
Solatron Electronic Group Limited: *See—*
Dorey, Howard Anthony, 3,729,733.
Solidum, Hamilton M.: *See—*
Browning, Myron E.; and Solidum, Hamilton M., 3,729,396.
Solomon, Nigel Allan; Godfrey, Nelson Frederick John; and Boxell, Alan James, to ERG Industrial Corporation Limited. Slide switch assembly with resilient bridging contact and terminal structure adaptable to 8/n pole configurations. 3,729,600, Cl. 200-16.00.
Somerhalder, Robert A.: *See—*
Bijasiewicz, Tadeusz M.; and Somerhalder, Robert A., 3,729,144.
Somerset, James P.: *See—*
Whitney, Charles A.; Somerset, James P.; and Hathway, Randal B., 3,729,669.
Sommer & Maca Glass Machinery Company: *See—*
Maca, Paul D., 3,728,830.
Sorensen, George C. External combustion engine. 3,728,858, Cl. 60-39.010.
Sorrells, Frank D.: *See—*
Lee, Charles A.; and Sorrells, Frank D., 3,729,005.
Soule Steel Company: *See—*
Lange, Herbert, 3,728,820.
Southwest Research Institute: *See—*
Briggs, Edward Miles; Edgar, William; and Rimmer, Rodgers Eugene, 3,729,699.
Souza, Anthony J.: *See—*
Woolworth, Richard G.; Souza, Anthony J.; and Landell, Harper, 3,728,812.
Spangler, Burton H.: *See—*
Beckman, Richard K.; and Spangler, Burton H., 3,728,801.
Spearhead, Inc.: *See—*
Hardway, Edward V., Jr., 3,729,728.
Specht, Dieter: *See—*
Vom Stein, Hans; and Specht, Dieter, 3,729,088.
Speetjens, Joseph T.: *See—*
Kelly, Robert F.; and Speetjens, Joseph T., 3,728,874.
Sperry Rand Corporation: *See—*
Wagstaff, Robert A.; and Waldrop, Thomas W., 3,729,143.
Spfirs, Kenneth K.: *See—*
Weinstein, Martin; Spfirs, Kenneth K.; and Baer, Robert B., 3,729,295.
Spinanger, Thomas S.: *See—*

Mankoff, Lawrence L.; and Spinanger, Thomas S., 3,729,653.
Sponcel Limited: *See—*
Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, 3,729,537.
Spontelli, Leonard P., to Crawford Fitting Company. Apparatus for swaging and testing ferrules. 3,728,771, Cl. 29-237.000.
Sprague, James M.: *See—*
Ziegler, Carl; and Sprague, James M., 3,729,508.
Spraying Systems Co.: *See—*
Butterfield, Ted Lee, 3,729,018.
Square D Company: *See—*
Montross, Robert C., 3,729,664.
St. Clair, John G., to General Electric Company. Solid state surge suppressor. 3,729,652, Cl. 317-16.000.
S.T. Dupont: *See—*
Bouvier, Daniel, 3,729,289.
Staats, Robert M.: *See—*
Kinzler, Raymond C.; and Staats, Robert M., 3,729,384.
Stade, Gerhard, to Lindner, Herbert, GmbH. Worm drive. 3,728,907, Cl. 74-425.000.
Stade, Kurt H., to Union Carbide Corporation. Kneading elements for extruders. 3,729,178, Cl. 259-192.000.
Stahl, Dieter: *See—*
Werner, Gerhard; Stahl, Dieter; and Lorentz, Guido Max Rudolf, 3,729,528.
Staley, Merton R.: *See—*
Gunto, Robert L.; and Staley, Merton R., 3,729,257.
Stamicarbon N.V.: *See—*
Elmendorp, Jan; and De Rooij, Abraham H., 3,729,304.
Standard Oil Company: *See—*
Gutberlet, Louis C.; Bertolacini, Ralph J.; and Brennan, Harry M., 3,729,521.
Standard Pressed Steel Co.: *See—*
Whiteside, Roger B.; and Cooper, William, 3,729,040.
Stauffer Chemical Company: *See—*
Bell, Russell N., 3,729,546.
Fancher, Llewellyn W., 3,729,478.
Steel Company of Canada, Limited, The: *See—*
Barclay, Allan Sangster, 3,728,892.
Stein, Volkhard: *See—*
Eckert, Konrad; Knapp, Heinrich; Sautter, Wilfried; and Stein, Volkhard, 3,728,993.
Stein, Werner: *See—*
Lepper, Herbert; Umbach, Wilfried; and Stein, Werner, 3,729,518.
Steinbeck, Hermann: *See—*
Hofmeister, Helmut; Steinbeck, Hermann; and Wiechert, Rudolf, 3,729,494.
Steinberg, George M.; Lieske, Claire N.; Ash, Arthur B.; and Blumbergs, Peter, to Ash Stevens, Inc. Use of certain methylphosphonate diester compounds as insecticides. 3,729,558, Cl. 424-214.000.
Steiner American Corporation: *See—*
Bahnsen, Erwin B., 3,729,174.
Steinman, Henry W.: *See—*
Zellner, Carl N.; and Steinman, Henry W., 3,729,453.
Steller, Arthur H. Wire clip closure machine. 3,728,774, Cl. 29-243.570.
Stendel, Wilhelm: *See—*
Wollweber, Hartmund; Stendel, Wilhelm; and Enders, Edgar, 3,729,485.
Stephenson, Andrew N. Inertially-stabilized optical system for missiles. 3,729,152, Cl. 244-3.160.
Stephenson, Paul A., to Xerox Corporation. Document stacker apparatus. 3,729,188, Cl. 271-64.000.
Sterling Drug Inc.: *See—*
Sette, James J.; and Nix, Neil (said Nix assor. to), 3,729,119.
Sette, James J.; and Nix, Neil (said Nix assor. to), 3,729,120.
Stern, Boris A.: *See—*
Hildebrandt, Guillermo J.; Maugel, Theodore R.; Morgan, Albert R.; and Stern, Boris A., 3,729,373.
Stern, Hansjoerg, to General Electric Company. Fluidic gaging device. 3,728,894, Cl. 73-37.500.
Steven, Gary, to Crucible Inc., mesne. Lead-bearing steel and method of manufacture. 3,729,293, Cl. 29-182.500.
Stevens, Chester U.; and Selke, William A., to Kimberly-Clark Corporation. Smoking product with improved flavor and method of making it. 3,729,009, Cl. 131-17.000.
Stevens, Samuel S. Paper making machine pick-up device including an inflatable member pressing an apron uniformly against the web. 3,729,376, Cl. 162-306.000.
Stevenson, Timothy John; and Scarrott, Gordon George, to International Computers limited. Actuator systems employing energy recovery techniques. 3,729,663, Cl. 318-135.000.
Stillman, Donald W.; and Bagheri, Mansour A. H., to Long-Lok Fasteners Corporation, mesne. Method of fabricating screw fasteners. 3,728,750, Cl. 10-10.000.
Stimson, Ronald M., to Eastman Kodak Company. Photographic film with magnetic recording layer. 3,729,317, Cl. 96-84.00r.
Stockel, Richard Frederick; and Herbes, William Frank, to American Cyanamid Company. Process for tris (hydroxymethyl) phosphine. 3,729,516, Cl. 260-606.50p.
Stoll, H., & Company: *See—*
Essig, Karl, 3,728,901.
Stollmann, Georg: *See—*
Bohnlein, Friedrich; and Stollmann, Georg, 3,729,047.
Stone, Roger Geoffrey, to Apt Controls Limited. Fee computing systems. 3,729,617, Cl. 235-61.70r.
Stout, Robert K. Method for making cast-in-place concrete structures. 3,728,838, Cl. 52-742.000.
Strashok, Donald T., to Amoco Production Company. Flare windshield. 3,729,287, Cl. 431-202.000.
Strasser, Klaus G.: *See—*
Brendgord, Thomas; Strasser, Klaus G.; and Wehrenberg, Jon W., 3,728,745.
Streater Industries Inc.: *See—*
Christensen, Earl, 3,729,161.
Streltsov, Konstantin Nikolaevich, to Osoboe opytno-konstruktorskoe bjuro po razvitiju mekhano-pnevmaticheskoi tekhnologii. Apparatus for producing thermoplastic sheet articles. 3,728,799, Cl. 34-151.000.
Stromberg-Carlson Corporation: *See—*
Altenburger, Otto; and Bansemir, Robert H., 3,729,593.
Gueldenpfennig, Klaus; and Russell, Stanley L., 3,729,591.
Stuart, Gerald L.; and Brown, John J., Jr., to Forrest Paschal Machinery Company. Brick stopping and grouping apparatus. 3,729,084, Cl. 198-21.000.
Stuetz, Dagobert E.: *See—*
Gump, Klaus H.; and Stuetz, Dagobert E., 3,729,549.
Stumpf, Robert J.; Mattes, William J.; and Minshell, Herman G., to Kimberly-Clark Corporation. Method of producing a high-loft nonwoven fabric. 3,729,353, Cl. 156-72.000.
Suarez, Humberto: *See—*
Koci, Ludvik F.; and Suarez, Humberto, 3,729,020.
Suda, Kazuyoshi: *See—*
Yoshimura, Shoichiro; Suda, Kazuyoshi; and Kagoshima, Saburo, 3,729,191.
Suga, Koji: *See—*
Itoh, Tsutomu; Suga, Koji; Takumi, Yasuo; and Yamamoto, Masahiro, 3,729,181.
Sugawara, Yutaka: *See—*
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.
Sugden, Bazil H.: *See—*
Coop, Vernon W., 3,728,881.
Sugimoto, Kaname; and Yoshida, Mikihiko, to Hayashibara Company. Process for producing low molecular amylose on a commercial basis. 3,729,380, Cl. 195-31.00r.
Sugisaka, Nobuyuki: *See—*
Petracek, Francis J.; and Sugisaka, Nobuyuki, 3,729,490.
Suiri Kogyo Kabushiki Kaisha: *See—*
Yokoyama, Kashimi, 3,729,054.
Sukolics, Ronald D., to American Metal Climax, Inc. Method for making insulated wall sections. 3,729,354, Cl. 156-244.000.
Suling, Carlhans; and Logemann, Heino, to Farbenfabriken Bayer Aktiengesellschaft. Vacuole-free filaments and films of acrylonitrile copolymers. 3,729,531, Cl. 260-898.000.
Sullivan, Robert J.: *See—*
Cobb, Delwin E.; and Sullivan, Robert J., 3,729,137.
Sulzer Brothers, Ltd.: *See—*
Silberring, Ludwig, 3,729,547.
Sumita, Muneo: *See—*
Imai, Takeshi; Nomura, Siniti; and Sumita, Muneo, 3,729,333.
Sumitomo Electric Industries, Ltd.: *See—*
Matsuura, Kenji, 3,729,571.
Nakahara, Tsuneo; Kitani, Hiroshi; and Yoshida, Kenichi, 3,729,740.
Sun Oil Company: *See—*
Norton, Richard V., 3,729,510.
Sun Oil Company of Pennsylvania, mesne: *See—*
Camp, Frederick W.; Eisen, Frederic S.; Fear, James Van Dyck; and Kirk, Merritt C., Jr., 3,729,407.
Sun Research and Development Co.: *See—*
Tumolo, Anthony L., 3,729,385.
Sunbeam Business Equipment Co.: *See—*
Reick, Kenneth R.; Tiger, Emil; and Wolff, David F., 3,729,255.
Superior Electric Company, The: *See—*
Whitney, Charles A.; Somerset, James P.; and Hathway, Randal B., 3,729,669.
SUTRAMED S.a.r.l.: *See—*
Mirkovitch, Velimir, 3,729,007.
Suzuki, Hideo: *See—*
Sakata, Masanobu; Nagata, Kenichi; Nagamori, Shigeru; and Suzuki, Hideo, 3,729,232.
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, to Chugai Seiyaku Kabushiki Kaisha. Method of treating hemolytic streptococci and the resultant preparaton containing the same. 3,729,554, Cl. 424-93.000.
Svanstrom, Elis Kjell Ake, to Rederiaktiebolaget Nordstjernan. Separation of iron by chlorination of a ferro-alloy. 3,729,544, Cl. 423-149.000.
Swalheim, Donald Arthur: *See—*
Mathre, Owen Bertwell; and Swalheim, Donald Arthur, 3,729,390.
Swanson, Dale A.; and Blackaby, Wilmur B. Archery target having pressure sensitive score indicating bags. 3,729,197, Cl. 273-102.20r.
Swartz, Henry D., to General Heat Sealing Corporation. Thermoplastic heat sealing apparatus. 3,729,357, Cl. 156-380.000.
Sweeney, James A.: *See—*

Mulich, Stephen F.; and Sweeney, James A., 3,728,809.
Swingball Investments (Proprietary) Limited: *See—*
Hutt, Peter Murray Bruce; and Gormley, Ian Gavin, 3,729,195.
Swiss Aluminium Ltd.: *See—*
Schmidt-Hatting, Wolfgang, 3,729,398.
Schrade, Jean, 3,729,355.
Szepesy, Laszlo: *See—*
Nagy, Zoltan; Sebestyen, Zsigmond; Szepesy, Laszlo; and Feher, Istvan, 3,728,843.
Tabuchi, Keizo: *See—*
Heinouchi, Yosiaki; Tabuchi, Keizo; and Tatsumi, Tetsuo, 3,729,639.
T.A.D. Avanti, Inc.: *See—*
Bonsky, Elmer C.; and Curtis, Lawrence A., 3,729,589.
Taisne, Jean, to Societe d'Optique, Precision Electronique et Mecanique-Sopelem. Apparatus for measuring or indicating movement by combined encoding and counting. 3,729,621, Cl. 235-92.0gc.
Takagaki, Yoshio: *See—*
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.
Takahashi, Hiroshi: *See—*
Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, 3,729,449.
Takahashi, Masao: *See—*
Imai, Tomio; Takahashi, Masao; Seki, Nobuyuki; and Irie, Yoshio, 3,729,378.
Takai, Nobuyoshi; and Hattori, Tadashi, to Nippondenso Kabushiki Kaisha. Electrically-operated extending and contracting antenna for running automobiles. 3,728,906, Cl. 74-421.00r.
Takami, Fumitaka: *See—*
Ikawa, Kenji; and Takami, Fumitaka, 3,729,472.
Takayama, Katuki: *See—*
Okamoto, Tosiaki; Inada, Masami; and Takayama, Katuki, 3,729,236.
Takemoto, Shizume: *See—*
Kimura, Isao; Matsui, Masao; Takahashi, Hiroshi; and Takemoto, Shizume, 3,729,449.
Takiguchi, Taisuke, to Kabushiki Kaisha Daini Seikosha. Work-transport apparatus. 3,729,104, Cl. 214-8.50k.
Takumi, Yasuo: *See—*
Itoh, Tsutomu; Suga, Koji; Takumi, Yasuo; and Yamamoto, Masahiro, 3,729,181.
Tamura, Yutaka, to Pioneer Electronic Corporation. Speaker box. 3,729,061, Cl. 181-31.00b.
Tanabe, Jiro. Crane. 3,729,100, Cl. 212-58.000.
Tanaka, Misugu: *See—*
Hashimoto, Kametaro; Nakamura, Hiroo; Okada, Toshio; Tanaka, Misugu; and Fukuhara, Kazuto, 3,729,417.
Tanaka, Mitsuo; and Honda, Akira, to Hitachi, Ltd. Microwave circulator circuits. 3,729,692, Cl. 333-1.100.
Tani, Hideo; Nagakura, Masahiko; and Mizutani, Takashi, to Kowa Company, Ltd. Triazine derivatives and process for their preparation. 3,729,468, Cl. 260-246.300.
Tanner, Hans: *See—*
Wernli, Max; and Tanner, Hans, 3,729,118.
Tarman, Paul B.: *See—*
Huebler, Jack; Weil, Sanford A.; and Tarman, Paul B., 3,729,105.
Tarnoff, Sherwin S., to Air Balance, Inc. Fire damper with smoke seal. 3,729,043, Cl. 160-1.000.
Tateo, Vito; and Galli, Guido, to Fabbrica Italiana Magneti Marelli S.p.A. Direct supply control device for a traction motor of vehicles, particularly for electric lifting trucks. 3,729,665, Cl. 318-139.000.
Tatsukawa, Keizo: *See—*
Fujimoto, Yasuo; Nagaoka, Koichi; and Tatsukawa, Keizo, 3,729,366.
Tatsumi, Tetsuo: *See—*
Heinouchi, Yosiaki; Tabuchi, Keizo; and Tatsumi, Tetsuo, 3,729,639.
Taylor, Clarence R. Safety closure for vials. 3,729,110, Cl. 215-9.000.
Taylor, William S., to FIC Industries, Inc. Precision level measurement and control apparatus. 3,729,667, Cl. 318-482.000.
Te Velde, Ties Siebolt, to U.S. Philips Corporation. Method of manufacturing a radiation-sensitive electronic device. 3,729,342, Cl. 117-217.000.
Tegt, Richard P.; Robertson, Douglas G.; and Blattel, Thomas V., to United States of America, Navy. Earphone receiver attenuation measurement technique. 3,729,598, Cl. 179-175.10a.
Teitel, Sidney: *See—*
Brossi, Arnold; Focella, Antonino; and Teitel, Sidney, 3,729,519.
Teledyne Industries, Inc.: *See—*
Bachle, Carl F., 3,728,994.
Telefonaktiebolaget LM Ericsson: *See—*
Widl, Walter Herbert Erwin; and Mattsson, Orjan Mats, 3,729,590.
Telesco Brophey Limited: *See—*
Weber, Heinz, 3,729,012.
Tenneco Chemicals, Inc.: *See—*
Ferstenberg, Charles, 3,729,534.
Minieri, Pasquale P., 3,729,479.
Minieri, Pasquale P., 3,729,480.
Minieri, Pasquale P., 3,729,481.
Minieri, Pasquale P., 3,729,482.
Ter Steege, Jan H.: *See—*
De Vos, Ferdinand A.; and Ter Steege, Jan H., 3,729,584.
Terdenge, Bernhard: *See—*
Kocks, Friedrich; Quambusch, Albert; and Terdenge, Bernhard, 3,728,890.
Terrell, Ross C., to Airco, Inc. 1,1,5-Trihydro-perfluoropentane as an inhalation anesthetic. 3,729,567, Cl. 424-350.000.
Texaco, Inc.: *See—*
Hopkins, Walker L.; Chvatal, Leland A.; and Edwards, Richard R., 3,729,624.
Texas Instruments, Incorporated: *See—*
Asam, Edward F., 3,729,737.
Theissen, Ferdinand: *See—*
Lussling, Theodor; Theissen, Ferdinand; and Weigert, Wolfgang, 3,729,499.
Thomas, Ralph D., to United States of America, National Aeronautics and Space Administration. Thermocouple tape. 3,729,343, Cl. 136-225.000.
Thomasson, James T.: *See—*
Jensen, Niels; Thomasson, James T.; and Mead, Donald C., 3,729,634.
Thompson, Stanley E. Disposable traction harness. 3,728,999, Cl. 128-84.00r.
Thore, Thomas J., to Glenoit Mills, Inc. Method and apparatus for knitting sliver high pile fabrics. 3,728,872, Cl. 66-9.00b.
Thrasher, Paul M.: *See—*
Eros, Stephen; and Thrasher, Paul M., 3,729,633.
Thrulow, Wallace; and Trapasso, Louis S., to General Electric Company. Instrument lighting system with inward illumination of the display and outward illumination of nomenclature and index marks. 3,729,626, Cl. 240-1.0el.
Thul, Heribert: *See—*
Andra, Wolfhart; Beyer, Erwin; Leonhard, Fritz; Thul, Heribert; and Winter-Gerst, Louis, 3,728,752.
Thune-Eureka A/S: *See—*
Brovoll, Oskar, 3,728,986.
Tiger, Emil: *See—*
Reick, Kenneth R.; Tiger, Emil; and Wolff, David F., 3,729,255.
Tiley, William L.: *See—*
Greenwood, Robert P.; and Tiley, William L., 3,729,049.
Tilson, William H.: *See—*
Johnson, Wallace F.; and Tilson, William H., 3,729,700.
Timely Products Corporation: *See—*
Hines, Benjamin M.; and Johnson, Richard I., 3,729,200.
Tingquist, Stanley Carroll: *See—*
Carnot, John J.; Tingquist, Stanley Carroll; Robb, Ronald Robert; and Feagin, Roy Chester, 3,729,050.
Tischlinger, Edward A.; and Baldwin, Brian E., to MPL Inc. Liquid dispenser and method and apparatus for filling same. 3,729,032, Cl. 141-2.000.
Titone Research & Development Corporation: *See—*
Titone, Seymour C., 3,728,873.
Titone, Seymour C., to Titone Research & Development Corporation. Machine knitting. 3,728,873, Cl. 66-87.000.
Titus, Robert J.: *See—*
Sevilla, Ernesto G.; and Titus, Robert J., 3,729,730.
Tobin-Arp Manufacturing Company: *See—*
Peterson, Bertil G., 3,728,940.
Todd, John H., to Michigan Chemical Corporation. Method of producing fire retardant emulsions. 3,729,434, Cl. 106-15.0fp.
Tokyo Gas Company Limited: *See—*
Iida, Hirofumi; and Watanabe, Kazufumi, 3,729,286.
Tomita, Tamaki; Unno, Kunihiko; and Kobayashi, Akiyoshi, to Toyoda Koki Kabushiki Kaisha. Thread grinding machine. 3,728,823, Cl. 51-95.0tg.
Tomiyama, Eijiro, to Tomy Kogyo Co., Ltd. Acrobatic toy robot. 3,728,815, Cl. 46-104.000.
Tomlinson, George A., Jr.; Long, Tommie J.; and Galloway, Gene C., to Unit Rig & Equipment Company. Divided body for dump trucks. 3,729,230, Cl. 298-7.000.
Tomomatsu, Hideo, to Jefferson Chemical Company, Inc. Stabilized high molecular weight poly (ethylene oxide). 3,729,441, Cl. 260-45.95r.
Tomy Kogyo Co., Ltd.: *See—*
Tomiyama, Eijiro, 3,728,815.
Topper Floats, Inc.: *See—*
Eby, Jack A.; and Andersen, Eugene F., 3,728,749.
Torigai, Akiyoshi, to Canon Kubushiki Kaisha. Spring clutch. 3,729,077, Cl. 192-8.00k.
Torrington Company, The: *See—*
Kelly, Robert F.; and Speetjens, Joseph T., 3,728,874.
Torvund, Asbjorn: *See—*
Boyum, Oystein; Folkestad, Finn Enok; and Torvund, Asbjorn, 3,729,550.
Toshima, Hisashi: *See—*
Sato, Hiroshi; and Toshima, Hisashi, 3,729,641.
Toth, Miklos, to Wilms, Hermann. Electrodynamic sound pickup or sound track cutting device. 3,729,596, Cl. 179-100.41k.
Toyoda Koki Kabushiki Kaisha: *See—*
Tomita, Tamaki; Unno, Kunihiko; and Kobayashi, Akiyoshi, 3,728,823.
Wada, Ryuji; Nishimura, Hideo; Kodama, Hayashi; and Kawamata, Taisuke, 3,728,826.
Toyoda Machine Works, Ltd.: *See—*
Narumi, Tadataka, 3,729,014.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*

Hashimoto, Kametaro; Nakamura, Hiroo; Okada, Toshio; Tanaka, Misugu; and Fukuhara, Kazuto, 3,729,417.
Inoue, Masahiko; and Saito, Takashi, 3,729,228.
Ishikawa, Masakazu; and Oka, Hiroyuki, 3,729,237.
Tractel S.A.: *See—*
Levardon, Raymond, 3,729,173.
Trampisch, Alfred: *See—*
Benzing, Peter; Klein, Richard; and Trampisch, Alfred, 3,729,093.
Trapasso, Louis S.: *See—*
Thrulow, Wallace; and Trapasso, Louis S., 3,729,626.
Tridan Tool & Machine, Inc.: *See—*
Ames, Ward A., 3,728,885.
Trimble, Carroll O., 50% to Cypert, James D. Form for manholes and the like. 3,729,165, Cl. 249-144.000.
Trubert, Marc R.: *See—*
United States of America, National Aeronautics and Space Administration, 3,729,743.
Trull, Waldo Ernest. Bow facing oar. 3,729,369, Cl. 115-24.200.
Trullas, Isidro Folch, to Argelich, Termes y Ca. Automatic reversal device for textile wet treatment apparatus. 3,728,878, Cl. 68-184.000.
TRW Inc.: *See—*
Allen, Clifford H., 3,729,277.
Shaw, Garrett D., 3,728,895.
Tsjurupa, Maria Petrovna: *See—*
Davankov, Vadim Alexandrovich; Rogozhin, Sergei Vasilievich; and Tsjurupa, Maria Petrovna, 3,729,457.
Tsujimoto, Kayoshi: *See—*
Kuramoto, Yoshio; Tsujimoto, Kayoshi; Yata, Kotaro; and Sahara, Masayoshi, 3,728,946.
Tsukasa Felt Shoji Kabushiki Kaisha: *See—*
Nakano, Kan, 3,729,270.
Tsurugi, Akira: *See—*
Machida, Hazime; Tsurugi, Akira; and Okuno, Zenjiro, 3,729,418.
Tuganova, Muza Konstantinova: *See—*
Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bijum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna, 3,729,540.
Tumolo, Anthony L., to Sun Research and Development Co. Inhibition of ether decomposition during distillation by quinoline addition. 3,729,385, Cl. 203-6.000.
Turak, John L.: *See—*
Klein, Bruce W.; and Turak, John L., 3,729,069.
Turcsan, Istvan: *See—*
Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, 3,729,413.
Turjanis, Vitalijs: *See—*
Shore, Donald G.; and Turjanis, Vitalijs, 3,729,367.
Turner, Maurice E.: *See—*
Kennedy, Kurt D.; and Turner, Maurice E., 3,729,046.
Tysk, Jan Erik, to LKB-Medical AB. Ultrasonic atomizer for atomizing liquids and forming an aerosol. 3,729,138, Cl. 239-102.000.
Ufnaleski, Jacek W.: *See—*
Monpetit, Louis A.; Schneider, Jurg V.; Gueret, Herve; Advenier, Pierre; Sallot, Georges R.; Jourde, Jean-Pierre Paul; and Ufnaleski, Jacek W., 3,728,989.
Ullman, John E., to Huntingdon Industries Incorporated. Case sealer. 3,728,841, Cl. 53-376.000.
Umbach, Wilfried: *See—*
Lepper, Herbert; Umbach, Wilfried; and Stein, Werner, 3,729,518.
UNC Industries, Inc.: *See—*
Musgrave, Donald A.; and McClain, Paul S., 3,729,243.
Union Carbide Corporation: *See—*
Anderson, John Erling, 3,729,298.
Plesich, Marion F.; and Zavaglia, Edmund A., 3,729,438.
Rosenthal, Louis A.; and Davis, Donald A., 3,729,672.
Schofield, John Allan; and Delano, Roger Albert, 3,729,424.
Stade, Kurt H., 3,729,178.
Unison Corporation: *See—*
MacKay, John A.; and Doran, John A., III, 3,729,300.
Unit Rig & Equipment Company: *See—*
Tomlinson, George A., Jr.; Long, Tommie J.; and Galloway, Gene C., 3,729,230.
United Concrete Pipe Corporation: *See—*
Lamborn, Homer C.; Gallup, Palmer C.; and Kao, Paul W., 3,728,883.
United Engineering and Foundry Company of Pittsburgh: *See—*
Shumaker, Charles Storer, 3,729,102.
United Gas Industries Limited: *See—*
McGowan, Eric, 3,729,131.
United Kingdom of Great Britain & Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Roberts, Derek Aubrey, 3,729,139.
United States of America
Agriculture: *See—*
Emken, Edward A., 3,729,379.
Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., 3,729,323.
Pomeranz, Yeshajahu; and Wehrli, Hans Peter, 3,729,461.
Atomic Energy Commission: *See—*
Davidson, Jackson B., 3,729,585.
Interior: *See—*
Henrie, Thomas A.; and Murphy, James Eugene, 3,729,306.
National Aeronautics and Space Administration: *See—*
Currie, James R.; and Kissell, Ralph R., 3,729,676.
Fuller, Harry V., 3,729,068.
Thomas, Ralph D., 3,729,343.
Walsh, Thomas M., 3,729,260.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Hurd, William J. Code regenerative clean-up loop transponder for a υ-type ranging system. 3,729,736, Cl. 343-6.50r.
Trubert, Marc R. Collapsible structure for an antenna reflector. 3,729,743, Cl. 343-915.000.
National Aeronautics and Space Administration, with respect to an invention by; Administrator:
Pawlik, Eugene V.; and Fitzgerald, Dennis J. Ion thruster with combination keeper electrode and electron baffle. 3,728,861, Cl. 60-202.000.
Zygielbaum, Arthur I.; and Brokl, Stanley S. Numerical computer peripheral interactive device with manual controls. 3,729,129, Cl. 35-10.200.
Navy: *See—*
Abernathy, David D., 3,728,964.
Arnold, Arthur A., 3,729,238.
Beans, Allen F.; Eddowes, Alfred M.; Gagliardi, Richard P.; and Koos, Edward E., 3,729,739.
Boyns, Jerry E., 3,729,742.
Conger, Robert L., 3,729,150.
Day, Lucius B., Jr., 3,729,679.
Dunlap, Richard M., 3,728,982.
Gey, William A., 3,729,350.
Hecker, Klaus J. 3,729,151.
Heller, Carl A.; Richter, Herbert P.; and McEwan, William S., 3,729,425.
Hinkle, Charles J.; and Marquardt, Frank R., 3,728,967.
Kratzer, Reinhold H.; and Paciorek, Kazimiera J. L., 3,729,552.
Kruse, Howard W., 3,729,351.
Magorian, William R., 3,728,935.
Mueller, William J.; and Cuomo, Frank W., 3,729,703.
Norris, Bob, 3,728,936.
Roehler, Frederick G., II, 3,728,748.
Silvia, Denis, 3,728,965.
Tegt, Richard P.; Robertson, Douglas G.; and Blattel, Thomas V., 3,729,598.
United States Steel Corporation: *See—*
Carr, Earl L.; and Foster, James E., 3,729,095.
Crane, Robert M., 3,729,219.
Greenwood, Robert P.; and Tiley, William L., 3,729,049.
Laycak, John F.; Readal, Gerald J.; and Prellwitz, Samuel B., 3,729,619.
Universal Oil Products Company: *See—*
Anderson, Robert F., 3,729,526.
Unno, Kunihiko: *See—*
Tomita, Tamaki; Unno, Kunihiko; and Kobayashi, Akiyoshi, 3,728,823.
Unterstenhofer, Gunter: *See—*
Buc, Karl Heinz; Draber, Wilfried; Hammann, Ingeborg; and Unterstenhofer, Gunter, 3,729,562.
Upjohn Company, The: *See—*
Beal, Philip F., III; and Pike, John E., 3,729,502.
Ericsson, Ronald J.; Portage, Daniel Lednicer; and Youngdale, Gilbert A., 3,729,566.
U.S. Philips Corporation: *See—*
Buchner, Robert Bertold, 3,729,592.
de Koe, Oscar Bernardus Philomenus Rikker; and Eggermont, Ludwig Desire Johan, 3,729,717.
Glasbergen, Johannes Wilhelmus; Greefkes, Johannes Anton; de Jager, Frank; and van den Enden, Adrianus Wilhelmus Maria, 3,729,678.
Te Velde, Ties Siebolt, 3,729,342.
van de Wijngaert, Louis Assuerus, 3,729,149.
U.S. Phillips Corporation: *See—*
Clijsen, Cornelis Wilhelmus Adrianus, 3,728,871.
Usines Docoufle: *See—*
Lanore, Raymond, 3,728,923.
Utt, Orval L.: *See—*
Cho, Boong Y.; Pfeifer, Robert J.; and Utt, Orval L., 3,729,632.
Vacano, Nickolas Lothar, to Rainier Companies, Inc., The. Preparation of beer. 3,729,321, Cl. 99-31.000.
Vaczulin, Jozsef: *See—*
Csuros, Zoltan; Petro, Jozsef; Dusza, Zsigmond; Simo, Zsuzsa, nee Barczy; Turcsan, Istvan; and Vaczulin, Jozsef, 3,729,413.
Vaille, Madeleine, to Orsymonde. α-(3,5 Dimethoxy)aminoacetanilides. 3,729,470, Cl. 260-247.20a.
Van Antwerp, Ferne R. Electric circuit for harvester automatic header control. 3,728,851, Cl. 56-208.000.
van de Wijngaert, Louis Assuerus, to U.S. Philips Corporation. Tape transport. 3,729,149, Cl. 242-183.000.
van den Enden, Adrianus Wilhelmus Maria: *See—*
Glasbergen, Johannes Wilhelmus; Greefkes, Johannes Anton; de Jager, Frank; and van den Enden, Adrianus Wilhelmus Maria, 3,729,678.
Vance, Bess L.: *See—*
Grunig, James K.; Anderson, Rodney J.; and Vance, Bess L., 3,729,541.

Vas, Alexandru, to Centrul de Sudura si Incercari la Oboseala Timisoara. Plasma generator. 3,729,611, Cl. 219-121.00p.

Vasilieva, Julia Vladimirovna: *See—*
Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bljum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna, 3,729,540.

Verge, Kenneth W.: *See—*
Royadjieff, George I.; and Verge, Kenneth W., 3,729,276.

Vernitron Corporation: *See—*
Berlincourt, Don A.; and Horvath, David J., 3,729,288.

Versatec, Inc.: *See—*
Lloyd William A., 3,729,123.

Verta-Tronics, Inc.: *See—*
Beiswinger, Wayne J.; and Witte, Walter R., 3,729,691.

Vest, James C., Jr. High pressure blow-off valve protector. 3,728,848, Cl. 55-387.000.

Vicari, Felix J.: *See—*
Natho, Paul J.; and Vicari, Felix J., 3,729,168.

Vinogradov, Gennady Georgievich: *See—*
Brudz, Vitaly Grigorievich; Pronyakin, Nikolai Nikolaevich; Bljum, Grigory Zakharovich; Khainson, Sarrya Isaakovna; Vinogradov, Gennady Georgievich; Tuganova, Muza Konstantinova; and Vasilieva, Julia Vladimirovna, 3,729,540.

Vishay Intertechnology, Inc.: *See—*
Rohr, Edwin, 3,728,810.

Vivian, Thomas A., to Dow Chemical Company, The. Process for reflowing organic surfaces. 3,729,331, Cl. 117-2.00r.

Vogel, Walter H., to Hayssen Manufacturing Company. Apparatus for cutting a web into sheets and positioning the sheets. 3,728,921, Cl. 83-151.000.

Voitov, Ivan Andreevich. Circular rotary magnetic chuck for metal-working machines. 3,729,658, Cl. 317-157.500.

Volkswagenwerk Aktiengesellschaft: *See—*
Erck, Karl, 3,728,832.
Leissa, Hans-Egon, 3,729,223.

Vom Stein, Hans; and Specht, Dieter, to Vom Stein, Hans, oHG. Roller conveyor. 3,729,088, Cl. 198-127.000.

Vom Stein, Hans, oHG: *See—*
Vom Stein, Hans; and Specht, Dieter, 3,729,088.

Von Camber, Peter. Coin degree finder. 3,728,795, Cl. 33-1.00n.

Von Linsowe, Carl V., 25% to Page, John T. Apparatus for producing a fluid-flow connection between relatively movable stationary and mobile conduit systems. 3,729,016, Cl. 137-344.000.

Von Ondarza, Leon. Sampling apparatus for high pressure hand dyeing machines. 3,728,877, Cl. 68-13.00r.

Vosteen, Robert E. High level non-contacting dynamic voltage follower for voltage measurement of electrostatically charged surfaces. 3,729,675, Cl. 324-72.000.

Vuaille, Andre, to Societe Industrielle Generale de Macanique Appliquee S.I.G.M.A. Progressively acting centrifugal regulators. 3,728,870, Cl. 64-25.000.

Vuilleumier, Ralph O., to Container Corporation of America. Apparatus for erecting cartons. 3,728,945, Cl. 93-53.00r.

Vyzkumny ustav bavlnarsky Usti nad Orlici: *See—*
Zabrodsky, Zdenek; Crhonek, Oldrich; Sebela, Jiri; and Mares, Milos, 3,729,029.

Wada, Goro: *See—*
Fujiwara, Hisao; Sakamoto, Kentaro; and Wada, Goro, 3,729,073.

Wada, Ryuji; Nishimura, Hideo; Kodama, Hayashi; and Kawamata, Taisuke, to Toyoda Koki Kabushiki Kaisha. Grinding machine having an adaptive control system. 3,728,826, Cl. 51-165.770.

Wada, Sakae: *See—*
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.

Wade, R. M., & Co.: *See—*
Cornelius, Gail, 3,729,141.

Wagenfeld, Gilbert B., to Cellucap Manufacturing Co. Adjustable head piece. 3,728,740, Cl. 2-197.000.

Wagner, Kuno: *See—*
Himmelmann, Wolfgang; Bergthaller, Peter; Quiring, Bernd; and Wagner, Kuno, 3,729,318.

Wagner, Milton H. Mobile irrigation sprinkler apparatuses and processes of operation thereof. 3,729,140, Cl. 239-212.000.

Wagstaff, Robert A.; and Waldrop, Thomas W., to Sperry Rand Corporation. Forage harvester cutting reel and gauge pins for positioning the cutting blades thereon. 3,729,143, Cl. 241-282.200.

Waibel, Helmut K., to Singer Company, The. Sh et handling device. 3,729,187, Cl. 271-51.000.

Wakabayashi, Rinske. Cassette tape recorder. 3,729,202, Cl. 274-4.00d.

Waldrop, Thomas W.: *See—*
Wagstaff, Robert A.; and Waldrop, Thomas W., 3,729,143.

Wallman, Irwin, to Consolidated Airborne Systems, Inc. Compensated fuel gage. 3,728,897, Cl. 73-304.00c.

Walsh, George E. Christmas tree container. 3,729,039, Cl. 150-52.00r.

Walsh, Thomas M., to United States of America, National Aeronautics and Space Administration. Interferometric rotation sensor. 3,729,260, Cl. 356-110.000.

Ward, Peter Thomas, to Rubery, Owen & Co. Limited. Means for connecting members together. 3,729,222, Cl. 294-67.00r.

Ward, William J., III, to General Electric Company. Method of separating mixtures of gases. 3,729,400, Cl. 204-128.000.

Warner & Swasey Company, The: *See—*
Harris, Earl D.; and Wirsing, Richard L., 3,729,190.
Joyce, Glover C., 3,728,824.
Ramunas, Valdas S., 3,728,854.

Warwicker, Eric Albert, to Porvair Limited. Method of producing water vapor permeable sheet material. 3,729,536, Cl. 264-41.000.

Warzecha, James J. Seamstress pin. 3,728,763, Cl. 24-150.0dp.

Wasson, Burton Kendall, to Frosst, Charles E., & Co. 4-(3-Amino-2-hydroxypropoxy)-1,2,5-thiadiazole compounds. 3,729,469, Cl. 260-247.100.

Wasson, Burton Kendall, to Frosst, Charles E., & Co. Certain 4-(3-amino-2-hydroxypropoxy)-1,2,5-thiadiazole-3-carboxamides. 3,729,477, Cl. 260-302.00d.

Watanabe, Akinori: *See—*
Iwasaka, Tatsuo; Matsuzawa, Hideto; Yuminaka, Takeo; Inuzuka, Isao; and Watanabe, Akinori, 3,729,066.

Watanabe, Kazufumi: *See—*
Iida, Hirofumi; and Watanabe, Kazufumi, 3,729,286.

Watson, Donald W. Article turnover conveyor. 3,729,189, Cl. 271-65.000.

Wean United, Inc.: *See—*
Bijasiewicz, Tadeusz M.; and Somerhalder, Robert A., 3,729,144.

Weaver, Merle L.: *See—*
Nonaka, Masahide; Hautala, Earl; and Weaver, Merle L., 3,729,323.

Weber, Heinz, to Telesco Brophey Limited. Self-closing umbrella. 3,729,012, Cl. 135-25.000.

Weber-Knapp Company: *See—*
Little, Carl H., 3,729,115.

Webster, Edward Ernest: *See—*
Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, 3,729,537.

Wehrenberg, Jon W.: *See—*
Brendgord, Thomas; Strasser, Klaus G.; and Wehrenberg, Jon W., 3,728,745.

Wehrli, Hans Peter: *See—*
Pomeranz, Yeshajahu; and Wehrli, Hans Peter, 3,729,461.

Wehrmann, Gunter A. H. Bulk freeze-drying apparatus. 3,728,798, Cl. 34-92.000.

Weigert, Wolfgang: *See—*
Lussling, Theodor; Theissen, Ferdinand; and Weigert, Wolfgang, 3,729,499.

Weil, Sanford A.: *See—*
Huebler, Jack; Weil, Sanford A.; and Tarman, Paul B., 3,729,105.

Weimer, Emory L. Plug type fishing lures. 3,728,811, Cl. 43-26.200.

Weiner, Al. Connector and electrical component assembly. 3,729,574, Cl. 174-94.00r.

Weiner, Murray: *See—*
Cash, William D.; Petrack, Barbara; and Weiner, Murray, 3,729,563.

Weinstein, Martin; Spfirs, Kenneth K.; and Baer, Robert B., to Chromalloy American Corporation. Corrosion resistant coating system. 3,729,295, Cl. 29-195.000.

Weirauch, Kurt: *See—*
Haberland, Ulrich; Lenz, Gunther; Schell, Hermann; and Weirauch, Kurt, 3,729,447.

Wellman Industries, Inc.: *See—*
Johns, Herman S., 3,728,760.

Welsh, James P.: *See—*
Groff, Eugene R.; and Welsh, James P., 3,729,604.

Werkspoor-Amsterdam, N.V.: *See—*
De Vos, Ferdinand A.; and Ter Steege, Jan H., 3,729,584.

Werner, George S., to Werner Industries, Inc. Travelling drill bit. 3,729,057, Cl. 175-262.000.

Werner, Gerhard; Stahl, Dieter; and Lorentz, Guido Max Rudolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the preparation of polyester resins with low shrinkage from polyester resinous compositions containing a rective filler. 3,729,528, Cl. 260-862.000.

Werner Industries, Inc.: *See—*
Werner, George S., 3,729,057.

Wernli, Max; and Tanner, Hans, to Buhrer, Erwin, mesne. Device for controlling the level of liquid metal in a casting container. 3,729,118, Cl. 222-56.000.

Westarn Corporation: *See—*
Claflin, Hyle K.; and Belke, Jack T., 3,729,212.

Western Electric Company, Incorporated: *See—*
De Angelo, Michael Anthony; and Sharp, Donald Jex, 3,729,388.
De Angelo, Michael Anthony; and Sharp, Donald Jex, 3,729,389.
Moore, Duncan Thomas; and Sands, Peter John, 3,729,253.

Western Microwave Laboratories, Inc.: *See—*
Sherwin, Russell, 3,729,710.

Westfall, Wayne L.; Kramm, David E.; and Sanchez, Moises G., to Grace, W. R., & Co. Assembly for polymeric dispensing. 3,729,256, Cl. 355-18.000.

Westinghouse Brake English Electric: *See—*
Bennett, Roger; and Clelford, Anthony Peter, 3,729,659.

Westlake, Edward B., Jr. Apparatus for producing a plastic shopping bag. 3,729,361, Cl. 156-510.000.

Whalen, Joseph J. Paint applicator. 3,728,755, Cl. 15-210.00r.

Wheelabrator-Frye Inc.: *See—*
Noble, Myron C., 3,728,822.

White, Alan Chapman: *See—*
Cavalla, John Frederick; and White, Alan Chapman, 3,729,465.

Whiteside, Roger B.; and Cooper, William, to Standard Pressed Steel Co. Floating replaceable anchor nut assembly. 3,729,040, Cl. 151-41.730.

Whitney, Charles A.; Somerset, James P.; and Hathway, Randal B., to Superior Electric Company, The. Fine-coarse position indicating system. 3,729,669, Cl. 318-594.000.

Whitney, W. A., Corporation: *See*—
Pfleiderer, George; and Paquet, Eugene H., 3,728,927.
Scott, William B., 3,728,919.

Whittaker, Thomas F.: *See*—
Fricker, David C.; and Whittaker, Thomas F., 3,729,651.

Widl, Walter Herbert Erwin; and Mattsson, Orjan Mats, to Telefonaktiebolaget LM Ericsson. Apparatus for transmitting a data flow by means of a PCM-flow. 3,729,590, Cl. 179-15.0ap.

Wiechert, Rudolf: *See*—
Hofmeister, Helmut; Steinbeck, Hermann; and Wiechert, Rudolf, 3,729,494.

Wiedmann, Siegfried K., to International Business Machines Corporation. Stored charge storage cell using a non latching SCR type device. 3,729,719, Cl. 340-173.0ca.

Wieland, Peter: *See*—
Anner, Georg; and Wieland, Peter, 3,729,466.

Wightman, Lawrance W., to Emerson Electric Co. Method of producing precision tapered tubes. 3,728,886, Cl. 72-364.000.

Wiktor, Dominik M., to Automatic Switch Company. Electrical switch having pivoted arm contact. 3,729,608, Cl. 200-170.00r.

Wilcox, David H., Jr., to Eastman Kodak Company. Di-(nitrodiphenylaminesulfonamido) compounds. 3,729,493, Cl. 260-397.700.

Wilde, Harold A. High capacity low pollutant airport design. 3,729,153, Cl. 244-114.00r.

Wilder, Joseph R.; and Kanbar, Maurice S. Disposable surgical retractors. 3,729,006, Cl. 128-303.00r.

Wilhelm, Gary, to Plainfield Ordnance Corporation. Apparatus for joining the slide-bolt and the barrel-frame of a firearm. 3,728,939, Cl. 89-196.000.

Wilke, Raud A., to Koehring Company. Control valve with metering type valve spool. 3,729,026, Cl. 137-625.690.

Williams, Garner W.: *See*—
Brown, William D.; Robertshaw, Thomas L.; and Williams, Garner W., 3,729,347.

Williamson, William Robert Nigel; Hicks, Terence Alan; and Day, Elaine Hilda, to Lilly Industries Limited. Phenyl alkyl amine derivatives. 3,729,475, Cl. 260-293.730.

Wilms, Hermann: *See*—
Toth, Miklos, 3,729,596.

Wilson, David A.: *See*—
Kusters, John A.; Wilson, David A.; and Hubby, Laurence M., Jr., 3,729,250.

Winchell, Charles F.: *See*—
Ekeson, Alfred G., 3,729,038.

Winkler, Klaus, to Siemens Aktiengesellschaft. Magnetic tape apparatus with graduated brake and/or motor torque for controlling tape winding. 3,729,148, Cl. 242-182.000.

Winter-Gerst, Louis: *See*—
Andra, Wolfhart; Beyer, Erwin; Leonhard, Fritz; Thul, Heribert; and Winter-Gerst, Louis, 3,728,752.

Wirsing, Richard L.: *See*—
Harris, Earl D.; and Wirsing, Richard L., 3,729,190.

Wiswell, George C., Jr. Apparatus for repairing steel supporting piles. 3,728,864, Cl. 61-54.000.

Witen, Louis: *See*—
Maycock, John Norman; and Witen, Louis, 3,729,352.

Witte, Walter R.: *See*—
Beiswinger, Wayne J.; and Witte, Walter R., 3,729,691.

Wolf, Karl-Heinz: *See*—
Leister, Heinrich; and Wolf, Karl-Heinz, 3,729,330.

Wolf, Richard E.; and Gorman, Susan B., to DeSoto, Inc. Preparation of n-vinyl carbazole by transvinylation. 3,729,483, Cl. 260-315.000.

Wolf, Seymour: *See*—
Reich, Hanan; and Wolf, Seymour, 3,729,176.

Wolfe, Keinz K.; and Alexander, Alan G., to New Britain Machine Company, The. Machine tool. 3,729,064, Cl. 184-6.140.

Wolfer, Allan J.; and Cooper, Edward, to Eastman Kodak Company, mesne. Error detecting and correcting apparatus for use in a system wherein phase encoded binary information is recorded on a plural track. 3,729,708, Cl. 340-146.10f.

Wolff, David F.: *See*—
Reick, Kenneth R.; Tiger, Emil; and Wolff, David F., 3,729,255.

Wolgast, Raymond P.: *See*—
Hall, Bertie Forrest, Jr., 3,728,891.

Wollenhaupt, Agnes, nee Stang: *See*—
Wollenhaupt, Jakob; and Wollenhaupt, Agnes, nee Stang, 3,729,083.

Wollenhaupt, Jakob; and Wollenhaupt, Agnes, nee Stang. Building block system for machine tools and production lines. 3,729,083, Cl. 198-19.000.

Wollweber, Hartmund; Stendel, Wilhelm; and Enders, Edgar, to Farbenfabriken Bayer Aktiengesellschaft. N-Haloalkenylcycloamidines. 3,729,485, Cl. 260-326.850.

Wood, Graham Charles: *See*—
Houghton, Roger Reid; and Wood, Graham Charles, 3,729,391.

Wood, Kenneth G.: *See*—
Mason, Mark T.; and Wood, Kenneth G., 3,729,266.

Wood, Lewis: *See*—
Huntington, Robert C.; and Wood, Lewis, 3,729,694.

Woodring, William B., to Olin Mathieson Chemical Corporation. Cartridge. 3,728,966, Cl. 102-42.00c.

Woodstream Corporation: *See*—
Woolworth, Richard G.; Souza, Anthony J.; and Landell, Harper, 3,728,812.

Woolworth, Richard G.; Souza, Anthony J.; and Landell, Harper, to Woodstream Corporation. Trolling bucket. 3,728,812, Cl. 43-55.000.

Worden, George M., Sr.; and Lane, Alexander M., to Wyssmont Company, Inc. Apparatus and methods for heat treating materials and incinerating vaporous off-products. 3,728,797, Cl. 34-32.000.

Worsham, Charles R.: *See*—
McGill, Robert L., Jr.; Worsham, Charles R.; and Green, Norman, 3,729,587.

Worth Bat Company, Inc.: *See*—
Heald, Jesse H., Jr., 3,729,196.

Wright Machinery Company: *See*—
Monsees, Claude E., 3,729,359.

Wright, Robert L. Packaging for dispensing material. 3,729,156, Cl. 244-136.000.

Wszolek, Walter R.: *See*—
Kehr, Clifton L.; and Wszolek, Walter R., 3,729,403.

Wurzburg, Otto B.: *See*—
Huey, John Robert; Wurzburg, Otto B.; and Goldsberry, Clyde D., 3,728,817.

Wutke, Alwin O. Double carriage shear. 3,728,924, Cl. 83-426.000.

Wyeth, John, & Brother Limited: *See*—
Cavalla, John Frederick; and White, Alan Chapman, 3,729,465.

Wyland, Roy Bruce, 1/2 to Kuhl, Henry Y. and 1/2 to Kuhl, Paul R., Sr. Carton closing machine. 3,728,842, Cl. 53-376.000.

Wyssmont Company, Inc.: *See*—
Worden, George M., Sr.; and Lane, Alexander M., 3,728,797.

Xerox Corporation: *See*—
Ciccarelli, Roger N., 3,729,310.
Gardner, John F.; and Parry, Michael B., 3,728,920.
Honjo, Satoru; Miyatuka, Hajime; and Osawa, Sadao, 3,729,419.
Langdon, Michael J., 3,729,311.
Snelling, Christopher, 3,729,334.
Stephenson, Paul A., 3,729,188.

Yamamoti, Osamu: *See*—
Yamashita, Tadaoki; and Yamamoti, Osamu, 3,729,630.

Yamamoto, Akihiro: *See*—
Suzuki, Shigeo; Noto, Takao; Takagaki, Yoshio; Wada, Sakae; Yamamoto, Akihiro; Ogawa, Haruki; Matsuno, Takashi; Okazaki, Hiroshi; and Sugawara, Yutaka, 3,729,554.

Yamamoto, Hirohiko, to Nippon Electric Company, Limited. Memory Circuit. 3,729,723, Cl. 340-173.00r.

Yamamoto, Masahiro: *See*—
Itoh, Tsutomu; Suga, Koji; Takumi, Yasuo; and Yamamoto, Masahiro, 3,729,181.

Yamashita, Katsunori: *See*—
Naito, Nobuyoshi; Hiraguri, Tsuyoshi; Yamashita, Katsunori; and Honda, Oomi, 3,729,117.

Yamashita, Tadaoki; and Yamamoti, Osamu, to Matsushita Electric Industrial Co., Ltd. Thermoluminescence readout instrument. 3,729,630, Cl. 250-71.50r.

Yamauchi Rubber Industry Co., Ltd.: *See*—
Shirai, Masayuki, 3,728,767.

Yanmar Diesel Engine Co., Ltd.: *See*—
Nagasaki, Michisuke, 3,728,913.

Yano, Kaoru, to Nippon Electric Company Limited. Cascade-feedback analog to digital encoder with error correction. 3,729,732, Cl. 340-347.0ad.

Yano, Osahiko, to Matsushita Electric Industrial Co., Ltd. Rotary head type magnetic recording and reproducing unit. 3,729,583, Cl. 178-6.60p.

Yasui, Tero: *See*—
Masada, Yoshiyasu; and Yasui, Tero, 3,729,498.

Yata, Kotaro: *See*—
Kuramoto, Yoshio; Tsujimoto, Kayoshi; Yata, Kotaro; and Sahara, Masayoshi, 3,728,946.

Yates, Lyle F.; Morris, Hugh C.; and Schmitt, James L., to Caterpillar Tractor Company. Reversible towing winch and method for operating same. 3,729,171, Cl. 192-12.00a.

Yeager, Dewey A., to Quadall Company, Inc. Digital automatic transmitter-receiver tester. 3,729,654, Cl. 317-28.00r.

Yen, Patrick P.: *See*—
Baskerville, Ralph J.; and Yen, Patrick P., 3,729,065.

Yokoyama, Etsuzo; and Oono, Yausya, 1/2 to Kabushiki Kaisha T.I.C. and 1/2 to Hitachi, Limited. Time-setting device. 3,729,601, Cl. 200-38.00r.

Yokoyama, Kashimi, to Suiri Kogyo Kabushiki Kaisha. Rejuvenation of wells and other ground-water collecting devices. 3,729,054, Cl. 166-312.000.

Yoshida, Fujio; Akamatsu, Kagesumi; and Hara, Nobito, to Mitsui Shipbuilding and Engineering Co., Ltd. and Mitsui Petrochemical Industries Limited. Apparatus for continuously decomposing hydrocarbon in a heating medium bath. 3,729,297, Cl. 48-92.000.

Yoshida, Kenichi: *See*—
Nakahara, Tsuneo; Kitani, Hiroshi; and Yoshida, Kenichi, 3,729,740.

Yoshida, Mikihiko: *See*—
Sugimoto, Kaname; and Yoshida, Mikihiko, 3,729,380.

Yoshimura, Shoichiro; Suda, Kazuyoshi; and Kagoshima, Saburo, to Nippon Electric Company, Limited. Open type stacking device. 3,729,191, Cl. 271-86.000.

Young, Raymond H., Jr., to Monsanto Company. Electrophotographic composition employing poly(vinyl-halobenzal) binder for organic photoconductors. 3,729,312, Cl. 96-1.500.

Young, Robert Leonard; and Seltzer, Daniel Arron, to Gamon-Calmet Industries, Inc. Apparatus for remote telemetering. 3,729,727, Cl. 340-188.000.

Youngdale, Gilbert A.: *See—*
Ericsson, Ronald J.; Portage, Daniel Lednicer; and Youngdale, Gilbert A., 3,729,566.

Yuminaka, Takeo: *See—*
Iwasaka, Tatsuo; Matsuzawa, Hideto; Yuminaka, Takeo; Inuzuka, Isao; and Watanabe, Akinori, 3,729,066.

Zabrodsky, Zdenek; Crhonek, Oldrich; Sebela, Jiri; and Mares, Milos, to Vyzkumny ustav bavlnarsky Usti nad Orlici. Apparatus for the transport of shuttles. 3,729,029, Cl. 139-12.000.

Zama, Masato: *See—*
Oda, Teishiro; Nakamura, Makoto; and Zama, Masato, 3,729,345.

Zavaglia, Edmund A.: *See—*
Plesich, Marion F.; and Zavaglia, Edmund A., 3,729,438.

Zeile, Karl: *See—*
Mentrup, Anton; Zeile, Karl; Danneberg, Peter; and Schromm, Kurt, 3,729,474.

Zellner, Carl N.; and Steinman, Henry W., to Celanese Corporation. Process for the preparation of polyamidoximes and polybenzimidazole (PBI) type polymers derived therefrom. 3,729,453, Cl. 260-79.30r.

Zenner, Walter J.; and Kranz, Raymond E., to Extel Corporation. Printing head for high speed dot matrix printer. 3,729,079, Cl. 197-1.00r.

Ziegler, Carl; and Sprague, James M., to Merck & Co., Inc. Sulfonylbenzoic acids. 3,729,508, Cl. 260-515.00a.

Ziemek, Gerhard, to Kabel- und Metallwerke Gutehoffnungshutte. Process for the production of straight-bead welded pipe. 3,728,782, Cl. 29-477.000.

Zoecon Corporation: *See—*
Siddall, John B.; and Henrick, Clive A., 3,729,486.

Zweidler, Reinhard; and Orban, Ivan. Process for the production of bis-arenazolyl methines. 3,729,467, Cl. 260-240.700.

Zweig, Arnold; and Maulding, Donald Roy, to American Cyanamid Company. Chemiluminescent fluorescer comprising phenylethynyl substituted organic compounds. 3,729,426, Cl. 252-188.3cl.

Zygielbaum, Arthur I.: *See—*
United States of America, National Aeronautics and Space Administration, with respect to an invention of, 3,729,129.

LIST OF DESIGN PATENTEES

PATENTS WERE ISSUED ON THE 24TH DAY OF APRIL, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Home Products Corp.: *See*—
Stoy, Raymond P., and Randazzo. 226,766.

American Molded Products Ltd.: *See*—
Duckett, John W., Brooks, and Reynolds. 226,784.

Anaconda Aluminum Co.: *See*—
Jones, Robert A. 226,775.

Anderson, Melvin R.: *See*—
Breed, Charles P., and Anderson. 226,778.

Bailey, Richard N.: *See*—
Vidakovits, Lajos J., and Bailey. 226,762.

Bidegain S.A.: *See*—
Bidegain, Georges C. 226,746.

Bidegain, Georges C., to Bidegain S.A. Baby shoe. 226,746, 4–24–73, Cl. D2—278.

Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire tread and buttress combination. 226,790, 4–24–73, Cl. D90—20.

Bocade, Emil J., to Keeler Brass Co. Drawer pull. 226,751, 4–24–73, Cl. D8—167.

Bolling, Melvin. Holder for pencils, papers, and the like. 226,786, 4–24–73, Cl. D74—5.

Boodakian, Barkere. Serrated ruler. 226,781, 4–24–73, Cl. D52—6.

Bowman, George E.: *See*—
Skyer, Robert A., and Bowman. 226,744.

Boyd, James W., to Packaging Corp. Packaging pad or the like. 226,755, 4–24–73, Cl. D9—294.

Boyd, James W., to Packaging Corp. Packaging pad or the like. 226,756, 4–24–73, Cl. D9—294.

Boyd, James W., to Packaging Corp. Packaging pad or the like. 226,757, 4–24–73, Cl. D9—294.

Boyd, James W., to Packaging Corp. Packaging pad or the like. 226,758, 4–24–73, Cl. D9—294.

Boyd, James W., to Packaging Corp. Packaging pad or the like. 226,759, 4–24–73, Cl. D9—294.

Breed, Charles P., and M. R. Anderson, to Westinghouse Electric Corp. Luminaire. 226,778, 4–24–73, Cl. D48—31.

Bristol-Myers Co.: *See*—
Quintal, D. J. 226,753.

Brooks, Edward A., Jr.: *See*—
Duckett, John W., Brooks, and Reynolds. 226,784.

Cameronics Ltd.: *See*—
Spence-Bate, Harry A. H. 226,782.

Chamin, Lillian A. Protective garment for the arms. 226,744, 4–24–73, Cl. D2—27.

Cooper Industries, Inc.: *See*—
Grossman, Morris G. 226,750.

Deane, Edward V.: *See*—
Deane, Loryn B. and E. V. 226,779.

Deane, Loryn B. and E. V. Combined trash receptacle and holder therefor. 226,779, 4–24–73, Cl. D49—32.

Dragen, William B. Dental gun. 226,767, 4–24–73, Cl. D24—1.

Duckett, John W., E. A. Brooks, and C. Reynolds, to American Molded Products Ltd. Road delineator. 226,784, 4–24–73, Cl. D72—1.

Ehrenreich, Hans G. Toy figure. 226,772, 4–24–73, Cl. D34—15.

Ehrenreich, Hans G. Toy figure. 226,773, 4–24–73, Cl. D34—15.

Electronic Communications Services Inc.: *See*—
Hatfield, William C., and Reed. 226,769.

Geraci, James L.: *See*—
Walchle, David L., and Geraci. 226,787.

Gillette Co., The: *See*—
Miller, Bernard J. 226,748.

Glaberson, Martin, to Warner-Lambert Co. Safety razor case. 226,754, 4–24–73, Cl. D9—186.

Grossman, Morris G., to Cooper Industries, Inc. Glue dispensing gun. 226,750, 4–24–73, Cl. D8—30.

Harter Corp.: *See*—
Koepke, Earl H. 226,747.
Koepke, Earl H. 226,749.

Hatfield, William C., and J. M. Reed, to Electronic Communications Services Inc. Telephone unit test set. 226,769, 4–24–73, Cl. D26—14.

International Harvester Co.: *See*—
Skyer, Robert A., and Bowman. 226,744.

Iso, Naoyuki. Hanger for display package. 226,752, 4–24–73, Cl. D8—255.

Jacobs, Lawrence I. Portable exerciser. 226,771, 4–24–73, Cl. D34—5.

Jones, Robert A., to Anaconda Aluminum Co. Broiler pan. 226,775, 4–24–73, Cl. D44—1.

Keeler Brass Co.: *See*—
Bocade, Emil J. 226,751.

Koepke, Earl H., to Harter Corp. Chair or the like. 226,747, 4–24–73, Cl. D6—66.

Koepke, Earl H., to Harter Corp. Combined leg and armrest for a chair or the like. 226,749, 4–24–73, Cl. D6—194.

Krapowicz, Jacob A., to Sperry Rand Corp. Hair curler heating cabinet. 226,788, 4–24–73, Cl. D86—10.

Lewis, Paul M. Hydroplane. 226,783, 4–24–73, Cl. D71—1.

Ludwick, Thomas W.: *See*—
Thompson, Thomas W., Martin, and Ludwick. 226,780.

Martin, M. Bruce.: *See*—
Thompson, Thomas W., Martin, and Ludwick. 226,780.

McClure, Robert B. Color display screen. 226,777, 4–24–73, Cl. D48—16.

McQuaid, Terry W.: *See*—
Prischak, Joseph J., McQuaid, and Prischak. 226,770.

Mider, Gerald E. Container for foodstuffs. 226,776, 4–24–73, Cl. D44—1.

Miller, Bernard J., to The Gillette Co. Display stand. 226,748, 4–24–73, Cl. D6—168.

Modern Faucet Mfg. Co.: *See*—
Rauh, Jack K. 226,763.
Rauh, Jack K. 226,764.

Nagel, Robert I. Reflector. 226,785, 4–24–73, Cl. D72—1.

Norgren, C. A., Co.: *See*—
Vidakovits, Lajos J., and Bailey. 226,762.

Packaging Corp.: *See*—
Boyd, James W. 226,755.
Boyd, James W. 226,756.
Boyd, James W. 226,757.
Boyd, James W. 226,758.
Boyd, James W. 226,759.

Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 226,789, 4–24–73, Cl. D90—9.

Perrault, Arthur W. Car top carrier. 266,761, 4–24–73, Cl. D14—27.

Prischak, Dennis J.: *See*—
Prischak, Joseph J., McQuaid, and Prischak. 226,770.

Prischak, Joseph J., T. W. McQuaid, and D. J. Prischak. Bowling tetherball game board. 226,770, 4–24–73, Cl. D34—5.

Quintal, D. J., to Bristol-Myers Co. A jar or similar article. 226,753, 4–24–73, Cl. D9—118.

Randazzo, Anthony G.: *See*—
Stoy, Raymond P., and Randazzo. 226,766.

Rauh, Jack K., to Modern Faucet Mfg. Co. Anti-siphon faucet. 226,763, 4–24–73, Cl. D23—23.

Rauh, Jack K., to Modern Faucet Mfg. Co. Spray head. 226,764, 4–24–73, Cl. D23—35.

Reed, John M.: *See*—
Hatfield, William C., and Reed. 226,769.

Reynolds, Clarke: *See*—
Duckett, John W., Brooks, and Reynolds. 226,784.

Schwartz, Martin W. Dental floss holder. 226,768, 4–24–73, Cl. D24—1.

Sirago, James J., and E. B. Walton. Detector for blood analysis. 226,760, 4–24–73, Cl. D16—1.

Skyer, Robert A., and G. E. Bowman, to International Harvester Co. Mower shroud. 226,744, 4–24–73, Cl. D40—1.

Snow, Charles C. Protective hat. 226,745, 4–24–73, Cl. D2—231.

Spence-Bate, Harry A. H., to Cameronics Ltd. Micro copying camera. 226,782, 4–24–73, Cl. D61—1.

Sperry Rand Corp.: *See*—
Krapowicz, Jacob A. 226,788.

Stoy, Raymond P., and A. G. Randozzo, to American Home Products Corp. A deodorant container or the like. 226,766, 4–24–73, Cl. D23—150.

Thompson, Thomas W., M. B. Martin, and T. E. Ludwick. Cup dispenser. 226,780, 4–24–72, Cl. D52—2.

Uniroyal, Inc.: *See*—
Blankenship, Arthur C. 226,790.

Vidakovits, Lajos J., and R. N. Bailey, to C. A. Norgren Co. Combined fluid regulator and valve. 226,762, 4–24–73, Cl. D23—21.

Walchle, David L., and J. L. Geraci, to Xomox Corp. Autoclavable prosthesis container. 226,787, 4–24–73, Cl. D83—1.

Wald Mfg. Co., Inc.: *See*—
Pawsat, Carlton P. 226,789.

Walton, Edward B.: *See*—
Sirago, James J., and Walton. 226,760.

Ward, Irving A. Water spray skirt for an aerator. 226,765, 4–24–73, Cl. D23—35.

Warner-Lambert Co.: *See*—
Glaberson, Martin. 226,754.

Westinghouse Electric Corp.: *See*—
Breed, Charles P., and Anderson. 226,778.

Xomox Corp.: *See*—
Walchle, David L., and Geraci. 226,787.

CLASSIFICATION OF PATENTS

ISSUED APRIL 24, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
21 3,728,736
151 3,728,737
161A 3,728,738
168 3,728,739
197 3,728,740
209 3,728,741

CLASS 3
1 3,728,742

CLASS 4
7 3,728,743
113 3,728,744
166 3,728,745
192 3,728,746

CLASS 5
351 3,728,747

CLASS 8
149.2 3,729,290

CLASS 9
8R 3,728,748
3,728,749

CLASS 10
10R 3,728,750

CLASS 11
1R 3,728,751

CLASS 13
25 3,729,570

CLASS 14
16 3,728,752
71 3,728,753
3,728,754

CLASS 15
210R 3,728,755
229A 3,728,756

CLASS 16
142 3,728,757
149 3,728,758

CLASS 19
105 3,728,759
159R 3,728,760

CLASS 23
301SP 3,729,291

CLASS 24
73 3,728,761
129C 3,728,762
150DP 3,728,763
230AP 3,728,764

CLASS 29
25.42 3,728,765
3,728,766
116AD 3,728,767
148.3 3,728,768
182.3 3,729,292
182.5 3,729,293
195 3,729,294
3,729,295
203B 3,728,769
203D 3,728,770
237 3,728,771
239 3,728,772
243.57 3,728,773
3,728,774
3,728,775
401 3,728,776
421 3,728,777
3,728,778
432 3,728,779
470.1 3,728,780
470.3 3,728,781
477 3,728,782
495 3,728,783
578 3,728,784
588 3,728,785
598 3,728,786
629 3,728,787

CLASS 30
53 3,728,788
90.1 3,728,789
92.5 3,728,790
294 3,728,791
355 3,728,792
383 3,728,793

CLASS 32
15 3,728,794

CLASS 33
1N 3,728,795
343 3,728,796

CLASS 34
32 3,728,797
92 3,728,798
151 3,728,799

CLASS 35
10.2 3,729,129
35J 3,728,800
60 3,728,801
73 3,728,802

CLASS 36
2.5AL 3,728,804
2.5E 3,728,803

CLASS 38
77.83 3,728,805

CLASS 40
11R 3,728,806
77.6 3,728,807
130E 3,728,808

CLASS 42
13 3,728,809
69A 3,728,810

CLASS 43
26.2 3,728,811
55 3,728,812

CLASS 44
62 3,729,296

CLASS 46
60 3,728,813
74R 3,728,814
104 3,728,815
116 3,728,816

CLASS 47
58 3,728,817

CLASS 48
92 3,729,297
111 3,729,298

CLASS 49
192 3,728,818
216 3,728,819
346 3,728,820

CLASS 51
2R 3,728,821
15 3,728,822
95TG 3,728,823
103R 3,729,300
105SP 3,728,824
164 3,728,825
165.77 3,728,826
168 3,728,827
204 3,728,828
215H 3,728,829
283 3,728,830

CLASS 52
2 3,728,831
211 3,728,833
282 3,728,834
334 3,728,835
400 3,728,832
687 3,728,836
731 3,728,837
742 3,728,838

CLASS 53
21FC 3,728,839
29 3,728,840
376 3,728,841
3,728,842

CLASS 55
25 3,728,843
33 3,728,844
67 3,728,845
159 3,728,846
371 3,728,847
387 3,728,848

CLASS 56
1 3,728,849
12.8 3,728,850
208 3,728,851

CLASS 57
34R 3,728,852
58.95 3,728,853
68 3,728,854

CLASS 58
38 3,728,855

CLASS 60
13 3,728,856
36 3,728,857
39.01 3,728,858
39.49 3,728,859
202 3,728,861
405 3,728,860

CLASS 61
39 3,728,862
45D 3,728,863
54 3,728,864
72.3 3,728,865

CLASS 62
126 3,728,866
140 3,728,867
222 3,728,868
266 3,728,869

CLASS 64
25 3,728,870
27R 3,728,871

CLASS 65
12 3,729,299
81 3,729,301
105 3,729,302
348 3,729,303

CLASS 66
9B 3,728,872
87 3,728,873
121 3,728,874
172E 3,728,875
192 3,728,876

CLASS 68
13R 3,728,877
184 3,728,878

CLASS 70
38R 3,728,879
363 3,728,880

CLASS 71
34 3,729,304
115 3,729,305

CLASS 72
52 3,728,881
114 3,728,882
142 3,728,883
273 3,728,884
294 3,728,885
318 3,728,887
325 3,728,888
364 3,728,886
402 3,728,889
406 3,728,890
465 3,728,891
476 3,728,892

CLASS 73
32 3,728,893
37.5 3,728,894
94 3,728,895
136C 3,728,896
304C 3,728,897
386 3,728,898
393 3,728,899

CLASS 74
5.5 3,728,900
27 3,728,901
56 3,728,902
89.15 3,728,903
3,728,904
220 3,728,905
421R 3,728,906
425 3,728,907
473R 3,728,908
491 3,728,909
695 3,728,910
752F 3,728,911
769 3,728,912
785 3,728,913
812 3,728,914
868 3,728,915

CLASS 75
10 3,729,306
3,729,307
128E 3,729,308
129 3,729,309

CLASS 81
64 3,728,916

CLASS 82
25 3,728,917

CLASS 83
22 3,728,918
62 3,728,919
106 3,728,920
151 3,728,921
277 3,728,922
318 3,728,923
426 3,728,924
441 3,728,925
467 3,728,926
621 3,728,927

CLASS 84
280 3,728,928
398 3,728,929
471 3,728,930
3,728,931
473 3,728,932

CLASS 85
61 3,728,933

CLASS 89
1B 3,728,934
1.811 3,728,935
1.812 3,728,936
7 3,728,937
26 3,728,938
196 3,728,939

CLASS 90
12.5 3,728,940

CLASS 91
447 3,728,941
469 3,728,942
506 3,728,943

CLASS 92
87 3,728,944

CLASS 93
53R 3,728,945

CLASS 95
10CT 3,728,946
11.5R 3,728,947
12.5 3,728,948
31FM 3,728,950
31R 3,728,949
42 3,728,951
53EB 3,728,952
93 3,728,953
94R 3,728,954

CLASS 96
1.1 3,729,310
1.2 3,729,311
1.5 3,729,312
27R 3,729,313
3,729,315
29D 3,729,314
36.2 3,729,316
84R 3,729,317
111 3,729,318
124 3,729,319

CLASS 98
1.5 3,728,955
86 3,728,956

CLASS 99
9 3,729,320
31 3,729,321
54 3,729,322
100P 3,729,323
111 3,729,324
123 3,729,325
140R 3,729,326
433 3,728,957
467 3,729,327

CLASS 100
100 3,728,958
218 3,728,959

CLASS 101
76 3,728,960
99 3,728,961
288 3,728,962
336 3,728,963

CLASS 102
2 3,728,964
22 3,728,965
42C 3,728,966
46 3,728,967

CLASS 104
5 3,728,968
28 3,728,969
44 3,728,970
3,728,971
117 3,728,972

CLASS 105
176 3,728,973
329 3,728,974
369BA 3,728,975

CLASS 106
15FP 3,729,434
58 3,729,329
87 3,729,328
288Q 3,729,330

CLASS 110
8R 3,728,976
3,728,977

CLASS 112
252 3,728,978
265 3,728,979

CLASS 113
1F 3,728,980
119 3,728,981

CLASS 114
23 3,728,982
162 3,728,983

CLASS 115
24.2 3,729,369
34R 3,728,984

CLASS 117
2R 3,729,331
11 3,729,332
16 3,729,333
37LE 3,729,334
76T 3,729,336
95 3,729,335
98 3,729,337
122P 3,729,338
124E 3,729,339
136 3,729,340
201 3,729,341
217 3,729,342

CLASS 118
2 3,728,985
41 3,728,986
62 3,728,987

CLASS 119
2 3,728,988

CLASS 123
32EA 3,728,989
90.56 3,728,990
119A 3,728,992
119R 3,728,993
148E 3,728,991
188GC 3,728,994
195A 3,728,995

CLASS 124
20B 3,728,996

CLASS 125
23 3,728,997

CLASS 128
9 3,728,998
84R 3,728,999
145.6 3,729,000
188 3,729,001
204 3,729,002
218DA 3,729,003
286 3,729,004
287 3,729,005
303R 3,729,006
335.5 3,729,007
418 3,729,008

CLASS 131
17 3,729,009

CLASS 132
58 3,729,010
83B 3,729,011

CLASS 135
25 3,729,012

CLASS 136
225 3,729,343

CLASS 137
93 3,729,013
101 3,729,014
330 3,729,015
344 3,729,016
414 3,729,017
469 3,729,018
493.6 3,729,019
522 3,729,020
525 3,729,021
533.15 3,729,022
614.03 3,729,023
624.13 3,729,024
625.33 3,729,025
625.69 3,729,026

CLASS 138
109 3,729,027
130 3,729,028

CLASS 139
12 3,729,029

CLASS 141
1 3,729,030
2 3,729,031
3,729,032
231 3,729,033
332 3,729,034

CLASS 145
46 3,729,035

CLASS 148
3 3,729,345
6.15Z 3,729,346
12.4 3,729,344
32 3,729,347
172 3,729,348

CLASS 149
2 3,729,349
21 3,729,350
41 3,729,351
74 3,729,352

CLASS 150
1.5R 3,729,036
52E 3,729,038
52R 3,729,039
521R 3,729,037

CLASS 151
41.73 3,729,040

CLASS 152
353 3,729,041

CLASS 156
72 3,729,353
244 3,729,354
283 3,729,355
296 3,729,356
380 3,729,357
394 3,729,358
466 3,729,359
499 3,729,360
510 3,729,361
542 3,729,362
559 3,729,363

CLASS 159
2 3,729,042

CLASS 160
1 3,729,043
201 3,729,044
371 3,729,045

CLASS 161
36 3,729,364
57 3,729,365
89 3,729,366
102 3,729,367
119 3,729,368
160 3,729,370
173 3,729,371
193 3,729,372

CLASS 162
123 3,729,373
203 3,729,374
252 3,729,375
306 3,729,376

CLASS 164
46 3,729,046

150 3,729,047
282 3,729,048
352 3,729,049
361 3,729,050

CLASS 165

22 3,729,051

CLASS 166

283 3,729,052
304 3,729,053
312 3,729,054

CLASS 172

719 3,729,055

CLASS 173

43 3,729,056

CLASS 174

15R 3,729,573
25R 3,729,571
66 3,729,572
94R 3,729,574
138R 3,729,575

CLASS 175

262 3,729,057
297 3,729,058

CLASS 178

5.1 3,729,576
5.4CD 3,729,579
5.4HE 3,729,578
5.4R 3,729,577
3,729,580
6.6B 3,729,584
6.6P 3,729,583
6.8 3,729,581
3,729,582
7.2 3,729,585
69.5R 3,729,586
88 3,729,587

CLASS 179

1A 3,729,588
6R 3,729,589
15AP 3,729,590
18AB 3,729,594
18EA 3,729,593
18FC 3,729,592
18GE 3,729,591
41A 3,729,595
100.41K 3,729,596
175 3,729,597
175.1A 3,729,598

CLASS 180

82 3,729,059

CLASS 181

.5XC 3,729,060
31B 3,729,061

CLASS 182

39 3,729,062
156 3,729,063

CLASS 184

6.14 3,729,064

CLASS 185

39 3,729,065

CLASS 187

29R 3,729,066

CLASS 188

18A 3,729,067
65.1 3,729,068
72.5 3,729,069
170 3,729,070
189 3,729,071
196 3,729,072
303 3,729,073

CLASS 191

49 3,729,599

CLASS 192

4A 3,729,075
4C 3,729,074
8K 3,729,077
12A 3,729,171
41A 3,729,076
105CP 3,729,078

CLASS 195

1.8 3,729,377
28R 3,729,378
30 3,729,379
31R 3,729,380
96 3,729,381
139 3,729,382

CLASS 197

1R 3,729,079
43 3,729,080
82 3,729,081

CLASS 198

19 3,729,082
3,729,083
21 3,729,084
25 3,729,085
34 3,729,086
122 3,729,087
127 3,729,088
203 3,729,089
220CB 3,729,090

CLASS 200

16D 3,729,600
38R 3,729,601
61.52 3,729,602
61.7 3,729,603
81.9R 3,729,604
83P 3,729,605
146R 3,729,606
166CT 3,729,612
167R 3,729,607
170R 3,729,608

CLASS 202

173 3,729,383
263 3,729,384

CLASS 203

6 3,729,385
8 3,729,386
19 3,729,387

CLASS 204

3 3,729,388
15 3,729,389
28 3,729,390
32R 3,729,391
47 3,729,396
51 3,729,392
52R 3,729,393
55R 3,729,394
59R 3,729,395
64R 3,729,397
67 3,729,398
3,729,399
128 3,729,400
159.14 3,729,403
159.15 3,729,404
159.23 3,729,405
192 3,729,406
195L 3,729,401
302 3,729,402

CLASS 206

44.11 3,729,091
52W 3,729,092
65R 3,729,093

CLASS 208

10 3,729,407
65 3,729,408
135 3,729,409

CLASS 209

80.5 3,729,094
90 3,729,095
97 3,729,096

CLASS 210

32 3,729,410
36 3,729,411
52 3,729,412
59 3,729,413
66 3,729,414
69 3,729,097
321 3,729,098

CLASS 211

46 3,729,099

CLASS 212

58 3,729,100

CLASS 213

45 3,729,101

CLASS 214

1BB 3,729,102
1BC 3,729,103
8.5K 3,729,104
17B 3,729,105
83.3 3,729,106
152 3,729,107
304 3,729,108

CLASS 215

9 3,729,110

CLASS 217

16 3,729,111

CLASS 219

69C 3,729,610
69G 3,729,609
121P 3,729,611
211 3,729,613
345 3,729,614
486 3,729,615
522 3,729,616

CLASS 220

17 3,729,112
18 3,729,113
20 3,729,114
22.3 3,729,115
60R 3,729,116

CLASS 221

9 3,729,117

CLASS 222

56 3,729,118
153 3,729,119
3,729,120
185 3,729,121
469 3,729,122

CLASS 226

7 3,729,123
34A 3,729,183

CLASS 228

19 3,729,124
26 3,729,125

CLASS 229

38 3,729,126
52A 3,729,127

CLASS 233

7 3,729,128

CLASS 235

61.11E 3,729,618
61.7R 3,729,617
70R 3,729,130
92DN 3,729,619
92DP 3,729,622
92GC 3,729,621
92PD 3,729,620
151.11 3,729,623
151.12 3,729,624
197 3,729,625

CLASS 236

99 3,729,131
101 3,729,132

CLASS 238

10E 3,729,133
3,729,134
151 3,729,135

CLASS 239

33 3,729,136
101 3,729,137
102 3,729,138
127.3 3,729,139
212 3,729,140
3,729,141
542 3,729,142

CLASS 240

1EL 3,729,626
4 3,729,627
52.6 3,729,628

CLASS 241

282.2 3,729,143

CLASS 242

55 3,729,144
55.53 3,729,145
67.4 3,729,146
72 3,729,147
182 3,729,148
183 3,729,149

CLASS 244

3.13 3,729,150
3.14 3,729,151
3.16 3,729,152
114R 3,729,153
122AF 3,729,154
123 3,729,155
136 3,729,156

CLASS 248

44 3,729,157
110 3,729,158
205R 3,729,159
218 3,729,160
242 3,729,161
291 3,729,162
487 3,729,109
3,729,163

CLASS 249

10 3,729,164
144 3,729,165
190 3,729,166

CLASS 250

49.5TE 3,729,629
71.5R 3,729,630
83.1 3,729,631
83.3D 3,729,632
199 3,729,633
204 3,729,634
219S 3,729,635
223R 3,729,636

CLASS 251

39 3,729,167
60 3,729,168
129 3,729,169
315 3,729,170

CLASS 252

8.8 3,729,416
25 3,729,415
46.6 3,729,417
62.1 3,729,418
3,729,419
77 3,729,420
90 3,729,421
106 3,729,422
142 3,729,423
171 3,729,424
188.3CL 3,729,425
3,729,426
300 3,729,427
454 3,729,428
3,729,429
522 3,729,430
535 3,729,431
545 3,729,432

CLASS 254

67 3,729,172
175.5 3,729,173

CLASS 259

4 3,729,175
3,729,176
7 3,729,174
10 3,729,177
192 3,729,178

CLASS 260

2H 3,729,433
18EP 3,729,435
23.7M 3,729,436
29.2EP 3,729,437
29.6R 3,729,438
29.7W 3,729,439
45.7P 3,729,440
45.95C 3,729,443
45.95F 3,729,442
45.95R 3,729,441
46.5E 3,729,444
46.5R 3,729,445
47CZ 3,729,446
47XA 3,729,447
65 3,729,448
78UA 3,729,452
78R 3,729,449
78.5T 3,729,450
78.5 3,729,451
79.3R 3,729,453
80PS 3,729,454
80.7 3,729,455
85.7 3,729,456
88.2C 3,729,457
182 3,729,458
205 3,729,459
209R 3,729,460
210R 3,729,461
239B 3,729,465
239.55D 3,729,466
240.7 3,729,467
246B 3,729,468
247.1 3,729,469
247.2A 3,729,470
248CS 3,729,471
256.5 3,729,472
268BC 3,729,474
283S 3,729,473
293.73 3,729,475
295.5A 3,729,476
302D 3,729,477
306.7 3,729,478
309.7 3,729,462
3,729,463
310C 3,729,479
3,729,480
3,729,481
3,729,482
310D 3,729,464
315 3,729,483
326A 3,729,510
326.3 3,729,484
326.85 3,729,485
327E 3,729,486
327R 3,729,487
343.2R 3,729,490
343.2S 3,729,489
343.6 3,729,488
3,729,491
396R 3,729,492
397.4 3,729,494
397.45 3,729,495
397.7 3,729,493
448.8R 3,729,496
462R 3,729,497
465D 3,729,500
465.8D 3,729,498
465.8R 3,729,499
467 3,729,501
468D 3,729,502
476C 3,729,503
482B 3,729,504
484A 3,729,505
484R 3,729,506
513B 3,729,507
515A 3,729,508
515R 3,729,509
570.7 3,729,511
580 3,729,512
586A 3,729,513
598 3,729,514
602 3,729,515
606.5P 3,729,516
607A 3,729,517
609A 3,729,518
613R 3,729,519
638A 3,729,520
672T 3,729,521
674A 3,729,523
674R 3,729,522
683D 3,729,524
3,729,525
683.48 3,729,526
857R 3,729,527
862 3,729,528
897B 3,729,529
897C 3,729,530
898 3,729,531
936 3,729,532
990 3,729,533

CLASS 261

114R 3,729,179

CLASS 264

41 3,729,536
47 3,729,537
49 3,729,538
54 3,729,534
84 3,729,535
89 3,729,539

CLASS 266

9 3,729,182

CLASS 267

64R 3,729,184

CLASS 269

20 3,729,185

CLASS 270

68A 3,729,186

CLASS 271

51 3,729,187
64 3,729,188
65 3,729,189
85 3,729,190
86 3,729,191

CLASS 273

7 3,729,192
26E 3,729,194
58C 3,729,195
72A 3,729,196
86B 3,729,193
102.2R 3,729,197
134AC 3,729,198
183B 3,729,199
3,729,200

CLASS 274

4D 3,729,202
4H 3,729,201
41.4 3,729,203

CLASS 277

134 3,729,204
229 3,729,205

CLASS 279

3 3,729,206

CLASS 280

11.2 3,729,207
16 3,729,208
36R 3,729,209
96.2R 3,729,210
124F 3,729,211
150.5 3,729,212
216 3,729,213
407 3,729,214
425A 3,729,215

CLASS 281

45 3,729,216

CLASS 285

183 3,729,217

CLASS 287

109 3,729,218
125 3,729,219

CLASS 292

336.3 3,729,220

CLASS 293

9 3,729,221

CLASS 294

67R 3,729,222

CLASS 296

1S 3,729,223
23MC 3,729,224

CLASS 297

184 3,729,225
232 3,729,226
391 3,729,227
396 3,729,228
442 3,729,229

CLASS 298

7 3,729,230

CLASS 299

3,729,231

CLASS 302

15 3,729,232

CLASS 303

21BE 3,729,234
21F 3,729,233
3,729,235
3,729,236
84A 3,729,237

CLASS 307

10BP 3,729,637
254 3,729,638

CLASS 308

72 3,729,238
217 3,729,239

CLASS 310

8.3 3,729,639
52 3,729,640
54 3,729,641
112 3,729,642

CLASS 312

8 3,729,240
107 3,729,241
3,729,242
116 3,729,243
195 3,729,244
223 3,729,245
330 3,729,246

CLASS 313

184 3,729,643

CLASS 315

3.5 3,729,644
11 3,729,645
39.55 3,729,646
209SC 3,729,647

CLASS 316

16 3,729,247

CLASS 317

2R 3,729,648
4 3,729,649
14R 3,729,650
16 3,729,651
3,729,652
18C 3,729,653
28R 3,729,654
33R 3,729,655
40A 3,729,656
101DH 3,729,657
157.5 3,729,658
234R 3,729,659
235R 3,729,660
3,729,661
3,729,662

CLASS 318

135 3,729,663
139 3,729,664
3,729,665
458 3,729,666
482 3,729,667
561 3,729,668
594 3,729,669

CLASS 321

11 3,729,670
3,729,671
45R 3,729,672

CLASS 323

43.5S 3,729,673

CLASS 324

.5R 3,729,674
72 3,729,675
78D 3,729,677
78E 3,729,676

CLASS 325

38A 3,729,678
49 3,729,679
55 3,729,680
304 3,729,681
3,729,682

CLASS 328

16 3,729,683

CLASS 329

104 3,729,684

CLASS 330

17 3,729,685
29 3,729,686
51 3,729,687

CLASS 331

1A 3,729,688
94.5 3,729,689
3,729,690
116M 3,729,691

CLASS 333

1.1 3,729,692
14 3,729,693
33 3,729,694
70A 3,729,695

CLASS 335

62 3,729,696
205 3,729,697

CLASS 339

18R 3,729,698
42 3,729,699
59L 3,729,700
223R 3,729,701

CLASS 340

1R 3,729,702
6R 3,729,703
15.5DS 3,729,704
18AC 3,729,705
31R 3,729,706
81R 3,729,707
146.1F 3,729,708
169 3,729,709
171R 3,729,710
172.5 3,729,711

	3,729,712
	3,729,713
	3,729,714
	3,729,715
	3,729,716
	3,729,717
	3,729,718
173CA	3,729,719
173R	3,729,722
	3,729,723
174FF	3,729,721
174YC	3,729,724
174.1E	3,729,720
174.1G	3,729,725
179TF	3,729,726
188	3,729,727
200	3,729,728
220	3,729,181
244C	3,729,729
324AD	3,729,730
324M	3,729,731
347AD	3,729,732
347NT	3,729,733
415	3,729,734
419	3,729,735
CLASS 343	
5SA	3,729,738
6.5R	3,729,736
7.3	3,729,737
17.1R	3,729,739
713	3,729,740
	3,729,741
854	3,729,742
915	3,729,743
CLASS 350	
3.5	3,729,249
7	3,729,248
149	3,729,250
	3,729,251
162SF	3,729,252
175GN	3,729,253
CLASS 353	
109	3,729,254
CLASS 355	
10	3,729,255
18	3,729,256
67	3,729,257
109	3,729,258
CLASS 356	
82	3,729,259
110	3,729,260
112	3,729,261
153	3,729,262
184	3,729,263
206	3,729,264
250	3,729,266
256	3,729,265
CLASS 401	
67	3,729,267
137	3,729,268
209	3,729,269
292	3,729,270
CLASS 415	
148	3,729,271
CLASS 416	
114	3,729,272
CLASS 417	
79	3,729,273
387	3,729,274
424	3,729,275
CLASS 418	
59	3,729,276
107	3,729,277
CLASS 423	
76	3,729,540
112	3,729,541
119	3,729,542
138	3,729,543
149	3,729,544
280	3,729,545
306	3,729,546
359	3,729,547
371	3,729,548
447	3,729,549
497	3,729,550
638	3,729,551
645	3,729,552
CLASS 424	
14	3,729,569
44	3,729,553
93	3,729,554
114	3,729,555
177	3,729,556
200	3,729,557
214	3,729,558
238	3,729,560
248	3,729,559
	3,729,563
270	3,729,561
304	3,729,562
318	3,729,568
325	3,729,564
326	3,729,565
342	3,729,566
350	3,729,567
CLASS 425	
10	3,729,278
198	3,729,279
251	3,729,280
361	3,729,281
393	3,729,282
450	3,729,283
456	3,729,284
CLASS 431	
8	3,729,285
174	3,729,286
202	3,729,287
264	3,729,288
344	3,729,289
CLASS 432	
228	3,729,180

CLASSIFICATION OF DESIGNS

D 2—	27	226,744
	231	226,745
	278	226,746
D 6—	66	226,747
	168	226,748
	194	226,749
D 8—	30	226,750
	167	226,751
	255	226,752
D 9—	118	226,753
	186	226,754
	294	226,755
		226,756
		226,757
		226,758
		226,759
D14—	27	226,761
D16—	1	226,760
D23—	21	226,762
	23	226,763
	35	226,764
		226,765
	150	226,766
D24—	1	226,767
		226,768
D26—	14	226,769
D34—	5	226,770
		226,771
	15	226,772
		226,773
D40—	1	226,774
D44—		226,775
		226,776
D48—	16	226,777
	31	226,778
D49—	32	226,779
D52—	2	226,780
	6	226,781
D61—	1	226,782
D71—		226,783
D72—		226,784
		226,785
D74—	5	226,786
D83—	1	226,787
D86—	10	226,788
D90—	9	226,789
	20	226,790

CLASSIFICATION OF PLANTS

P. —	15	03,322
P. —	20	03,321
P. —	28	03,323
P. —	41	03,325
P. —	68	03,324

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,729,399
3,729,522
3,729,676
2 : 3,729,535
4 : 3,729,096
3,729,165
3,729,182
3,729,406
3,729,541
3,729,573
3,729,602
3,729,694
5 : 3,729,243
6 : 3,728,741
3,728,748
3,728,750
3,728,754
3,728,757
3,728,773
3,728,789
3,728,790
3,728,795
3,728,805
3,728,808
3,728,809
3,728,820
3,728,833
3,728,842
3,728,850
3,728,860
3,728,861
3,728,881
3,728,882
3,728,883
3,728,895
3,728,896
3,728,914
3,728,925
3,728,930
3,728,931
3,728,932
3,728,935
3,728,988
3,729,000
3,729,016
3,729,017
3,729,022
3,729,027
3,729,046
3,729,052
3,729,055
3,729,095
3,729,108
3,729,123
3,729,129
3,729,134
3,729,150
3,729,152
3,729,156
3,729,170
3,729,179
3,729,180
3,729,187
3,729,199
3,729,203
3,729,216
3,729,234
3,729,238
3,729,242
3,729,245
3,729,250
3,729,251
3,729,254
3,729,260
3,729,271
3,729,276
3,729,323
3,729,350
3,729,351
3,729,362
3,729,363
3,729,367
3,729,401
3,729,402
3,729,425
3,729,427
3,729,433
3,729,478
3,729,486
3,729,501
3,729,504
3,729,530
3,729,552
3,729,572
3,729,575
3,729,576
3,729,589
3,729,597
3,729,598
3,729,634
3,729,649
3,729,677
3,729,700
3,729,706
3,729,708
3,729,710
3,729,716
3,729,725
3,729,735
3,729,736
3,729,741
3,729,742
3,729,743
8 : 3,728,836
3,728,857
3,728,862
3,729,035
3,729,268
3,729,322
3,729,507
3,729,713
9 : 3,728,756
3,728,839
3,728,864
3,728,874
3,728,888
3,728,939
3,728,966
3,729,042
3,729,082
3,729,124
3,729,188
3,729,200
3,729,279
3,729,285
3,729,394
3,729,396
3,729,424
3,729,426
3,729,432
3,729,497
3,729,564
3,729,669
3,729,702
10 : 3,729,375
3,729,386
3,729,390
3,729,510
12 : 3,728,743
3,729,057
3,729,065
3,729,092
3,729,153
3,729,169
3,729,186
3,729,369
3,729,574
3,729,620
3,729,661
3,729,720
13 : 3,729,312
3,729,421
15 : 3,729,002
16 : 3,728,791
17 : 3,728,761
3,728,772
3,728,778
3,728,781
3,728,787
3,728,830
3,728,855
3,728,869
3,728,875
3,728,880
3,728,885
3,728,916
3,728,919
3,728,927
3,728,933
3,728,941
3,729,018
3,729,019
3,729,020
3,729,031
3,729,032
3,729,043
3,729,051
3,729,074
3,729,079
3,729,081
3,729,085
3,729,105
3,729,113
3,729,116
3,729,122
3,729,137
3,729,145
3,729,147
3,729,159
3,729,171
3,729,174
3,729,177
3,729,185
3,729,189
3,729,214
3,729,217
3,729,240
3,729,255
3,729,257
3,729,326
3,729,377
3,729,379
3,729,420
3,729,483
3,729,489
3,729,491
3,729,526
3,729,532
3,729,542
3,729,594
3,729,603
3,729,604
3,729,638
3,729,671
3,729,685
3,729,688
3,729,715
3,729,722
18 : 3,728,788
3,728,822
3,728,879
3,728,915
3,728,942
3,728,956
3,728,957
3,729,025
3,729,044
3,729,069
3,729,072
3,729,090
3,729,107
3,729,235
3,729,305
3,729,354
3,729,358
3,729,440
3,729,521
3,729,533
3,729,578
3,729,680
19 : 3,728,817
3,728,851
20 : 3,728,905
3,729,450
3,729,451
3,729,455
21 : 3,729,112
3,729,201
3,729,636
3,729,714
3,729,727
22 : 3,728,848
3,728,889
3,729,058
3,729,429
3,729,515
24 : 3,728,744
3,728,902
3,728,936
3,729,256
3,729,272
3,729,352
3,729,382
3,729,403
3,729,404
3,729,558
3,729,587
3,729,633
25 : 3,728,821
3,728,824
3,728,828
3,728,985
3,729,008
3,729,009
3,729,098
3,729,224
3,729,258
3,729,299
3,729,314
3,729,356
3,729,357
3,729,376
3,729,570
3,729,626
3,729,660
3,729,684
3,729,690
26 : 3,728,764
3,728,777
3,728,829
3,728,891
3,728,912
3,728,937
3,728,938
3,728,994
3,729,013

3,729,045
3,729,062
3,729,067
3,729,078
3,729,133
3,729,209
3,729,212
3,729,226
3,729,265
3,729,291
3,729,300
3,729,315
3,729,331
3,729,411
3,729,422
3,729,434
3,729,439
3,729,444
3,729,445
3,729,460
3,729,490
3,729,502
3,729,566
3,729,609
3,729,642
3,729,650
27 : 3,728,763
3,728,940
3,728,959
3,728,977
3,729,033
3,729,034
3,729,036
3,729,071
3,729,087
3,729,161
3,729,192
3,729,313
3,729,581
3,729,683
28 : 3,729,111
29 : 3,728,784
3,728,785
3,728,886
3,728,958
3,729,246
3,729,269
3,729,503
3,729,511
31 : 3,728,753
3,728,779
3,728,909
32 : 3,729,306
33 : 3,728,776
3,728,997
3,729,266
34 : 3,728,742
3,728,746
3,728,774
3,728,794
3,728,797
3,728,835
3,728,984
3,729,038
3,729,039
3,729,040
3,729,050
3,729,063
3,729,119
3,729,120
3,729,163
3,729,176
3,729,178
3,729,193
3,729,205
3,729,296
3,729,324
3,729,327
3,729,328
3,729,348
3,729,388
3,729,389
3,729,408
3,729,409
3,729,430
3,729,452
3,729,453
3,729,464
3,729,471
3,729,487
3,729,488
3,729,514
3,729,516
3,729,519
3,729,529
3,729,534
3,729,549
3,729,567
3,729,608
3,729,653
3,729,672
3,729,691
3,729,695
3,729,696
3,729,726
36 : 3,728,736
3,728,738
3,728,769
3,728,816
3,728,831
3,728,834
3,728,847
3,728,866
3,728,894
3,728,897
3,728,920
3,728,947
3,728,949
3,728,953
3,728,954
3,728,963
3,728,976
3,729,006
3,729,010
3,729,011
3,729,059
3,729,080
3,729,094
3,729,106
3,729,110
3,729,115
3,729,121
3,729,127
3,729,132
3,729,136
3,729,160
3,729,181
3,729,206
3,729,225
3,729,229
3,729,249
3,729,252
3,729,294
3,729,298
3,729,310
3,729,311
3,729,316
3,729,317
3,729,320
3,729,332
3,729,334
3,729,400
3,729,438
3,729,446
3,729,448
3,729,458
3,729,479
3,729,480
3,729,481
3,729,482
3,729,496
3,729,546
3,729,548
3,729,553
3,729,563
3,729,577
3,729,591
3,729,593
3,729,622
3,729,635
3,729,637
3,729,645
3,729,648
3,729,662
3,729,666
3,729,674
3,729,707
3,729,712
3,729,719
3,729,724
3,729,729
3,729,730
3,729,731
37 : 3,728,760
3,728,872
3,728,969
3,728,972
3,729,084
3,729,336
3,729,340
3,729,359
3,729,364
3,729,618
39 : 3,728,771
3,728,793
3,728,796
3,728,825
3,728,854
3,728,867
3,728,917
3,728,975
3,728,980
3,729,003
3,729,023
3,729,049
3,729,064
3,729,130
3,729,207
3,729,241
3,729,247
3,729,277
3,729,288
3,729,301
3,729,302
3,729,325
3,729,339
3,729,343
3,729,370
3,729,373
3,729,392
3,729,431
3,729,436
3,729,442
3,729,456
3,729,505
3,729,582
3,729,616
3,729,632
3,729,675
40 : 3,728,755
3,729,053
3,729,194
3,729,230
3,729,287
3,729,337
3,729,360
3,729,524
3,729,525
3,729,654
3,729,704
41 : 3,728,858
3,729,141
3,729,213
42 : 3,728,740
3,728,745
3,728,775
3,728,800
3,728,812
3,728,837
3,728,841
3,728,868
3,728,873
3,728,884
3,728,908
3,728,918
3,728,926
3,728,945
3,728,948
3,728,970
3,728,981
3,728,995
3,728,996
3,729,102
3,729,128
3,729,143
3,729,144
3,729,175
3,729,190
3,729,253
3,729,262
3,729,293
3,729,303
3,729,329
3,729,344
3,729,347
3,729,361
3,729,384
3,729,385
3,729,397
3,729,407
3,729,415
3,729,500
3,729,508
3,729,509
3,729,513
3,729,551
3,729,568
3,729,606
3,729,619
3,729,627
3,729,652
3,729,667
3,729,670
3,729,679
3,729,739
44 : 3,728,982
3,729,628
3,729,703
45 : 3,728,852
3,729,365
47 : 3,728,762
3,729,005
3,729,196
3,729,493
3,729,585
48 : 3,728,770
3,728,844
3,728,865
3,728,922
3,728,999
3,729,015
3,729,024
3,729,135
3,729,140
3,729,146
3,729,162
3,729,168
3,729,197
3,729,198
3,729,219
3,729,231
3,729,295
3,729,387
3,729,414
3,729,441
3,729,523
3,729,624
3,729,651
3,729,699
3,729,728
3,729,737
49 : 3,728,974
50 : 3,728,849
51 : 3,728,737
3,728,739
3,728,964
3,728,965
3,728,967
3,729,068
3,729,126
3,729,623
3,729,681
3,729,682
53 : 3,728,749
3,728,811
3,728,960
3,729,037
3,729,091
3,729,166
3,729,278
3,729,321
54 : 3,728,944
3,729,210
3,729,308
55 : 3,728,801
3,728,807
3,728,921
3,729,026
3,729,099
3,729,263
3,729,353
3,729,383
3,729,461
3,729,615
3,729,657
3,729,664

DESIGN PATENTS

6 : 226,744
226,760
226,763
226,764
226,765
226,768
226,771
226,779
226,781
226,784
8 : 226,762
9 : 226,767
226,788
17 : 226,748
226,774
226,785
18 : 226,755
226,756
226,757
226,758
226,759
226,786
21 : 226,775
226,789
26 : 226,747
226,749
226,751
226,790
31 : 226,780
226,783
34 : 226,750
36 : 226,754
226,766
39 : 226,776
226,787
42 : 226,770
226,777
48 : 226,769
49 : 226,745
51 : 226,778

PLANT PATENTS

6 : 03,321
03,322
03,323
03,325
55 : 03,324

U. S. GOVERNMENT PRINTING OFFICE : O - 1973

U.S. DEPARTMENT OF COMMERCE

Frederick B. Dent, Secretary

PATENT OFFICE

Robert Gottschalk, Commissioner